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GLEANINGS IN BEE CULTURE

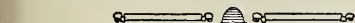
MAY, 1919

EDITORIAL

ONCE MORE we wish to impress on beekeepers the necessity for the production of a very considerable amount of comb honey this year. It becomes more and more evident that the market is going to demand a larger proportion of comb honey than during the necessitous war times. Will you do your part? Will you try to produce as much of it as you did before the war?



Comb-Honey Production.



IN THE LAST six or seven months the editor has covered a large portion of the United States, and during this time he has had an opportunity of studying a good many ques-



Foul Brood Increasing—the Remedy.

tions at first hand. One of those questions (or problems, rather) is that foul brood is not being brought under control, but is rather increasing in some States, in spite of all the bee legislation that has been enacted. This is not saying that our foul-brood laws have been of no effect. They have, in fact, done a great deal of good. Had it not been for them, bee disease would have run rampant, and conditions would have been infinitely bad; but there is this undeniable fact—a condition rather than a theory—that foul brood is not being cleaned up, and in many localities in the United States, it is becoming worse; and unless something is done in the near future, more than has been done in the past, it will come very near getting beyond our control. The Editor, during the period that the Short Courses were given in California, had extended opportunity to talk with Dr. E. F. Phillips and other members of the Government staff, including Frank C. Pellett of the American Bee Journal, on the subject of bee legislation.

Mr. Pellett has served as a foul-brood inspector in Iowa for a number of years. During all this time he was becoming more and more convinced that the legislation of the old days of the "big stick," or, to put it another way, of judge, jury, and executioner, under the name of bee inspector, was inadequate. After thinking the matter over considerably he went to his State legislature and asked for a repeal of the law—the very

law that gave him the job of State bee inspector of apiaries. This was a very unusual procedure; but, as will be seen, he was inspired by the good of the beekeepers of Iowa, rather than by a personal interest. After a considerable amount of work he secured the enactment of another law that gives promise of solving the serious problem of the control and final abatement of the two foul-brood diseases in Iowa. Before we go into the features of this law let us discuss some of the conditions that brought about its enactment.

Under the old laws there is usually created the office of a State bee inspector with power to appoint deputy inspectors whose duty it shall be to inspect the apiaries that contain bee disease and prescribe treatment. As a general thing they can cover only a part of the State, and that imperfectly. These bee inspectors are clothed with police authority to compel treatment or the destruction of colonies whenever, in their judgment, either policy should be carried into effect. The knowledge that they can do this causes trouble. Their very title virtually creates the function of judge, jury, and executioner all in one person. If the State bee inspector is the right sort of man, an expert beekeeper, a diplomat, and if that bee inspector keeps the "big stick" out of sight, and, instead, becomes an instructor and a royal fellow with a glad hand, everything goes well. But if, as the editor happens to know, the bee inspector is a man of another type, a mere police officer with no tact, harm is done. Or he may be connected with a clique of beekeepers who are his favorites. He may use his power of discretion—judge, jury, and executioner—in such a way as to favor some and shut out others. That some beekeepers have done this very thing has been reported more than once. Some may get their jobs thru a political pull, and politics very often puts in the wrong man.

The form of legislation that Mr. Pellett proposes creates the office of State Apiarist, or bee advisor, who, in connection with certain deputies that he may appoint, not only gives instructions on how to know and treat disease, but how to keep bees in a way that will bring financial returns. He is not a police officer but an educator.

Says Dr. Phillips, ignorance more often

than willfulness is the cause of spread of bee disease throuth the country. What is needed is instruction, not force. It is Mr. Pellett's idea, and the editor emphatically agrees with him, that the bee inspector should be a bee advisor. Instead of trying to inspect only beekeepers who are reported to have bee diseases, he arranges for a series of field meets at some beekeeper's yard where there may or may not be bee disease. With a crowd of two or three dozen beekeepers he gives lectures and demonstrations. There is no suggestion of a "big stick" back of him, as he has none. Instead, he is sent by the State to extend the glad hand, or helping hand, if you please, to the beekeeper who voluntarily will cure his bee disease himself as soon as he is taught how to do it. It takes a lot of personal instruction before the average man can clean up without putting in jeopardy every beekeeper for miles around.

Some months ago the editor called upon a beeman who had a pretty yard of about a hundred colonies. The hives were well painted, and everything looked neat and orderly. When we asked if we might see his bees he remarked that he had no objections, but stated that the bee inspector had made him a lot of expense and trouble—in fact, had ordered him to treat his bees or pay a fine. He had complied, he said, but seemed to be a little sore about it. On looking thru his apiary we discovered American foul brood in the first hive. We thought we would see just how this man would operate. His very movements showed that he did not know how to open a hive, for the bees resented his bungling movements at the beginning. He did not know how to open a hive properly—much less how to treat disease. With the sharp point of his hive-tool he dug into some suspected cells that roped out very badly. "That looks like foul brood," he said. We certainly agreed with him. Into the next hive he took the same point of the tool, without cleaning it, and dug into some healthy brood to see if it was all right. Then we explained to him how by that procedure he would scatter foul brood all over his apiary. He seemed grateful for the information and promised to do better.

Down the road, perhaps half a mile further, we met a good beekeeper who complained that he was going out of business because the other fellow down the road had made it impossible for him to keep his bees clean. He said the inspector had ordered his neighbor to clean up, but in the clean-up he had started robbing on infected material.

We happened to know that the bee inspector was a good man, but it perhaps had not occurred to him that what that man needed was instruction, and a great deal of it, before he ordered him to clean up. It would have been infinitely better for him to call two or three dozen beekeepers to the yard and give them a demonstration on how to treat. The trouble is now that many bee-

keepers, when ordered to clean up, are so unsanitary in their methods because they do not know how, that they clean out all the beekeepers in the territory by scattering foul brood far and wide. They don't do it viciously but ignorantly. Phillips is right.

At this point it may be argued that a law that creates a State apiarist, or bee advisor, with only the function of State lecturer, would not make the man clean up who willfully harbors disease. Mr. Pellett's idea is to have enforcement provisions in the law, but the enforcement of it not to be in the hands of the bee advisor, but with the county prosecutor or sheriff, where it logically and legally belongs. Any bee advisor, or any beekeeper, can, in the case of willfulness or continued negligence, compel treatment; but that compulsion would come from the regular constituted authorities whose business it is to enforce all laws, including the bee law.

There is scarcely a State in the Union where inspectors are able to cover more than one-tenth of the territory with the appropriations at their disposal. Under the new plan the same money would go much further, because the State would require the State lecturer and his deputies to arrange for meetings of three or four dozen beekeepers. These beekeepers would then be instructed, just exactly as the farmers are by the county farm advisors or the county extension men under the Lever law. In this way the same appropriation would go vastly further in the matter of eradicating bee disease alone, to say nothing about making better beekeepers who would themselves become educators among their neighbors.

In short, the Pellett plan of bee legislation is a general application of the Lever law under which the farm advisors or county extension men work, only in this case the erstwhile bee inspector, instead of becoming a police officer, becomes a bee advisor and a lecturer.



WE USED TO SAY that O. O. Poppleton of Stuart, Fla., was the greatest migratory bee-



**Migratory
Beekeeping.**

keeper that ever lived. Perhaps he was, if we consider the business of moving bees in other than carload shipments. But there is another form of migratory beekeeping that has in late years grown to enormous proportions. This involves the movement of cars of bees from one State to another. During the past year or so bees have been moved from Texas, Idaho, Montana, and Wyoming, to California and back again in thousand-colony lots. Into Riverside County alone there have been moved something like five thousand colonies of bees from other States.

The plans seem to be this: A crop of honey is caught in Idaho or Montana, and the bees moved, as cold weather comes on, into Cali-

fornia, where the bees are built up during winter on the eucalyptus, after which they may or may not make a 60-pound can of orange-blossom honey to the colony. This so-called "orange-blossom," by the way, will very often be mixed with mountain sage, wild alfalfa, and buckwheat. After catching the California crop the bees are loaded into cars and moved into Idaho, Montana, and Wyoming when they are just about in time to catch the alfalfa. In this way the cycle continues year in and year out.

During the high prices of honey that have prevailed during the last two years the practice has been highly remunerative to those who have sufficient capital and skill to conduct the business. For example, the Superior Honey Co. of Ogden took last year \$50,000 worth of honey. The company owned and operated three thousand colonies, fifteen hundred of which were moved into California and then moved back again.

The Editor has run across something like a dozen extensive migratory beekeepers in California that have gotten the business of moving bees in carload lots down to an exact science, and they have made money. This does not mean that they do not sometimes have some losses, particularly if it turns hot suddenly after the bees are *en route*. There is absolutely no difficulty in moving during the cool weather. When the bees are moved from the North to California, the problem is comparatively simple, but when they are moved from California during hot weather to the North, trouble begins if one does not understand the business.

Some beekeepers use refrigerator cars during hot weather, packing them with ice. Others use open cattle-cars, carrying along barrels of water to sprinkle the bees when the weather is insufferably hot or the car stops for transfer. As many as 700 colonies have been moved in a car.

We hope to be able to give some concrete cases later on, with particulars.



BEES DON'T WORK for nothing and board themselves anywhere in the United States;



Decoy Hives in California.

but in some seasons and in some localities they come very near doing that in California, as we have pointed out before. This does not imply that bees do not require expert attention here. As a matter of fact they need more of it than in the East; but the very fact that bees can many times shift for themselves has made it possible for runaway swarms to occupy caves, crevices in the rocks, cavities in trees, and places in and outside of buildings. These wild bees, together with those in control of man, anywhere from 10 to 25,000 colonies to the county, make it possible for runaway swarms to be more or less common—so common, indeed, that the business of trapping swarms in decoy hives is fairly

common and profitable. It would be less common if beekeepers would watch their bees closely. They either have too many or else neglect what they have—result, swarming and lots of it.

The high price of honey during the last two years has made it next to impossible to buy bees for either love or money. Accordingly, many people have resorted to the practice of catching stray swarms in boxes or hives conveniently located 10 or 12 feet above the ground, in trees. These hives contain preferably a piece of comb and two or more frames of foundation. Those who make a business of putting out these decoy hives place 10 or 20 of them among the trees, and some have captured as many as 10 or 20 swarms a day. Ernest Allen, secretary of the local exchange of La Mesa, near San Diego, has caught as high as six swarms a day for seven days. In fact, Mr. Allen made his start in beekeeping from his trap swarms.

Sometimes the trap-swarming business is in disrepute, especially when the trapper locates numerous decoy hives around a large apiary belonging to another man. Such poachers usually "get in so bad" that the beekeepers finally run them out of the country. They do not object, they say, to legitimate decoy-hive trapping, for there are hundreds of stray swarms that would go to the rocks or trees, and thereafter be a constant menace on account of bee disease.

There is another form of bee-catching that is totally distinct from the decoy-hive scheme; and that is where certain disreputable persons fix up robber-trap hives with bee-escapes to trap their neighbors' bees. During the dearth of honey a person of this kind can bring on a genuine case of spring and summer dwindling among his neighbor beekeepers, and at the same time enrich himself. The beekeeper's colonies begin to dwindle, and he wonders why. Soon he finds out, and then, *biff-bang-wow!*

This kind of trapping has all but gone out of practice for the reason that it would go pretty hard with the trapper if he should be caught at it. One or two parties engaged in the practice are being watched very narrowly, I am told. In some parts of the State where the law can not be used, the shotgun stands ready. We, of course, can not recommend or condone one wrong to right another, much less the use of a gun, even to correct an abuse.

We have learned of another form of pilfering, where certain persons will go into isolated apiaries in broad daylight and take a frame of brood and bees out of every colony, replacing them with comb taken from the honey-house. There are many beeyards in California that are located up in the mountains where one can go and help himself to bees and brood with but little fear of detection for the time being; but murder will out. The honest beekeeper, when he discovers a case of unusual dwindling, is on the watch.

OUR old friend, the enemy, is attacking us under a camouflage. It is no other than European foul brood in its last stages.

While in its early stages it shows up in the old ways and form, yet, as if to make confusion worse confounded, in its later stages it tries to sail under the colors and the camouflage of the American type. This has caused endless confusion among beekeepers all over the country, with the result that thousands of good combs have been wasted by burning or melting, supposedly infected with the American foul brood.

During the last six or seven months that I have been on the road, I have observed a form of brood disease very much resembling American foul brood, but lacking some of the characteristics. I have found it in seven or eight States in the East. I have found it and have heard of it all over California. Sometimes I thought it was a new disease because it was not quite American, and certainly it did not look like the Euro-

THOSE CONFUSING SYMPTOMS

*Not a New Foul Brood Disease,
but a Hitherto Unrecognized Form
of an Old Disease*

By E. R. Root

there was a milder form of American that would disappear of itself or yield to the treatment of requeening? Was it possible that some new organism had gotten into the American type of disease and modified it, so that it was less virulent?

I talked with Dr. Phillips of the Bureau of Entomology about it, and he was sure we didn't have any new disease and the matter was dropped for the time being; but like Banquo's ghost, whatever it was, it would not down. Here and there I was hearing about and seeing what looked like American foul brood, that would either disappear without treatment or yield to European treatment and strengthening.

I began writing to Dr. Phillips insisting that we had some very confusing symptoms in California—the same symptoms I had seen in several Eastern States. I urged that

pean which I had known so long. Whatever it was it would behave like European, but appeared very much like the American. Was it possible that



Fig. 1.—Government Bacteriologist A. P. Sturtevant telling the beekeepers how to distinguish the difference between the last stages of European and regular American foul brood. He has his microscope in front of him, so that he can make an examination of the germs of the two respective diseases.

he send his bacteriologist here where he could do actual field work and perhaps determine what we had. I had given up all thought of any one's coming, especially after Congress adjourned without making certain appropriations. About that time, however, I received a letter from Dr. Phillips saying that I would be glad to know that Mr. Sturtevant, his bacteriologist, was on his way to California, and would I be kind enough to place him in touch with some of these confusing cases about which I had been writing. Very fortunately a series of field meets among the California beekeepers had been scheduled, and I lost

ous field meets give the beekeepers the symptoms by which the ordinary bee inspector or beekeeper could detect and differentiate between these confusing forms. This he did. After hearing him give these symptoms a number of times I am able to report the following synopsis:

New Light on An Old Subject.

It has been customary in describing the differentiation of symptoms between American and European foul brood to say that American usually attacks the brood after capping while European attacks before capping. This is true of typical cases. But



Fig. 2.—Bacteriologist Sturtevant looking for *Bacillus alvei* in European foul brood.

no time in getting him on the programs at these meetings.

Numerous samples were brought in by the beekeepers, most of which samples were either clearly American or clearly European. Later on we found some cases that were very confusing and one sample looked so much like European in some of its characteristics that several of us were confused. Mr. Sturtevant finally made the remark that he had better examine it under the microscope, with the result that he found it to be a clear case of American.

I have learned of a good many other cases that were just as confusing and I, therefore, suggested that Mr. Sturtevant at the vari-

within the past year or two more and more instances have appeared where this distinction had become obliterated. This has brought about a confusion in the minds of beekeepers as to which disease they were dealing with.

Under the microscope, says bacteriologist Sturtevant, the two diseases are easily differentiated, as the germs causing them are entirely different in appearance and habits. In American foul brood there is almost never found anything but the one organism, the cause of the disease—*Bacillus larvae*. This fact accounts for the uniformity of symptoms of this disease under ordinary circumstances. The germ is very characteristic

in appearance. It forms under favorable conditions for its active growth a small oval resistant body, called a spore, which resists drying and high temperatures. After killing the larva or pupa this germ decomposes the dead larvæ in a peculiar manner, leaving the trachea and chitinous parts intact and making a gluey substance of the soft parts. This gives the characteristic sliminess or ropiness and, later on, adherence of the scale to the cell wall. The glue-pot, or as Mr. Sturtevant says, fish-glue odor, is also quite characteristic. However, there may be stages which have heretofore been insufficiently described where the larvæ may not have been dead long enough to have developed the characteristic ropiness and adherence to the cell wall. At this stage the partly dried-down mass may not have even the characteristic color nor adhere to the cell wall, leading to the belief that it may be European.

The dead larva of European in any unsealed cell can usually be distinguished from that of American in unsealed cells by the abnormal position which it assumes. The former may be coiled in the bottom of the cell, or may be extended somewhat diagonally in the cell. A careful examination will show several of the larvæ twisted like long-drawn-out corkscrews, that is, the larva twisted to what we call a half turn.

There is never any of the corkscrew appearance with American. It is scarcely ever (if ever) coiled in the bottom of the cell. Death does not take place until the larva is stretched out, or after it is sealed.

In the case of European foul brood there are different conditions. The germ *Bacillus*

pluton, causing this disease, does not form these resistant spores. It also seems to be less active in the way it decomposes the dead larvæ. According to Sturtevant, in European foul brood, along with the organism that kills the healthy larvæ, may often be found several secondary germs having no relation to the cause of the disease, but simply causing the larvæ to decompose. There is one organism in particular, *Bacillus alvei*, originally supposed to be the cause of this disease, which often seems to be associated with European foul brood in large numbers. It appears that the more of these organisms there are present after *Bacillus pluton* kills the larvæ, the more the appearance will change. Instead of the typical moist melting stage of the disease there are found, due to the action of the *Bacillus alvei*, more and more larvæ that have not died, until after they have become capped. In this stage it is often difficult to distinguish from American foul brood as the dead larvæ may, before they dry down, show a tendency to sliminess, to rope somewhat, and to develop the coffee-brown color. However, the way they rope is different from the characteristic fine thread of American. It is coarser, at times lumpy, and too moist to stretch far; also as it becomes a little more dried it will stretch like an old rubber band and in breaking instead of snapping back will remain stretched out. At this time the mass has a very disagreeable spoiled-meat odor. If, however, the case is watched for a few days longer allowing the dead material to dry down, it will be found that these masses, which generally lie very irregularly placed in the cells, may be easily removed entire; while in the case

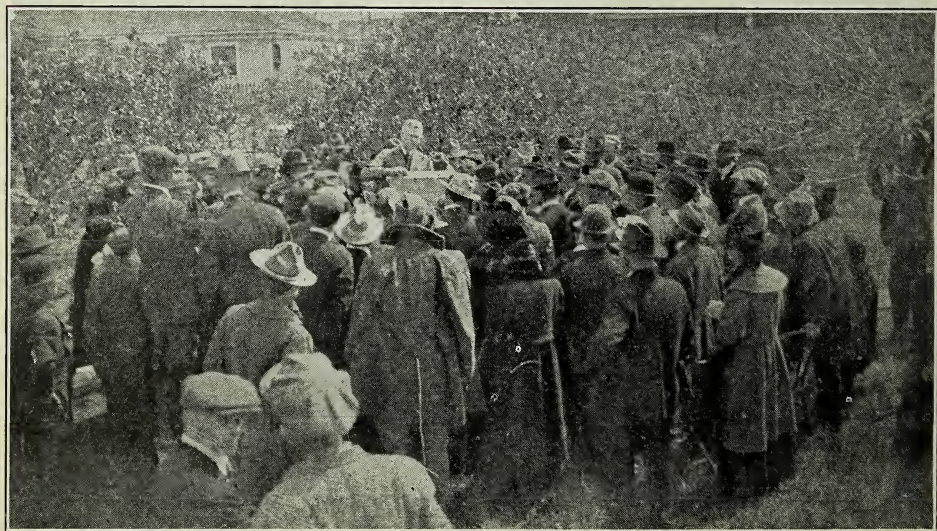


Fig. 3.—Government Extension man, Jay Smith, explaining to the group of beekeepers assembled at the apiary of F. C. Wiggins, San Diego, Calif., how to rear queens. Mr. Smith has been doing this all over the State.

of American foul brood it is practically impossible to remove an entire scale. Furthermore, instead of being brittle like the American scale, these irregular masses will bend like a piece of old rubber.

Owing to the fact that European foul brood has been so neglected in California,

safest course to pursue where European is known to be prevalent.

The microscopic diagnosis will, as Mr. Sturtevant clearly demonstrated, bring out this difference at once, since the germs causing the disease are so characteristically different. The microscope, aided by other laboratory methods, also explains the abnormal symptoms which may appear in European foul brood when there are large numbers of this secondary contaminating organism present which causes a different type of decomposition.

Recapitulation.

So far it is apparent from Mr. Sturtevant's investigation, that there are only two brood diseases the same as we have heretofore known. This confirms the conclusions which he had already reached in his laboratory work on brood diseases. The American remains just as it was without any change. The European, however, takes a later stage somewhat resembling the other disease. At first all the symptoms that heretofore have been given for European appear. Later on, if nothing is done to effect a cure, a secondary organism, *Bacillus alvei*, comes in and modifies the symptoms to such an extent that European takes on a form similar to American, but yields to the treatment of European. The *Bacillus alvei* apparently slows up the action of the *Bacillus pluton*, which is the real cause of European, so that



Fig. 4.—Miss Whipple of Mendleson & Whipple, Ventura, Calif., in her farmerette suit. Miss Whipple has general charge of the farmerettes in rearing queens.

due to the custom of treating for American, *Bacillus alvei*, the secondary decomposing organism, has increased to such numbers that it has changed some of the symptoms of the disease in its last stages particularly. Therefore it is not safe to jump at conclusions too hastily in the case of brood diseases, since there are stages at which it is very difficult to differentiate without the aid of a microscope. If it is impossible to get a microscopic diagnosis, Mr. Sturtevant recommends that the best plan is to treat the case vigorously as if it was European foul brood, by dequeening the colony and building it up strong by doubling with other queenless colonies and then watching developments. This kind of treatment with good Italian stock and making the colonies strong is good beekeeping, disease or no disease, and is the only way to secure a crop. If it is European foul brood it will clean under this treatment. If it is American foul brood it will not clean up, and soon the definite characteristic appearances will develop. This will eliminate the melting-up of combs in European foul brood and is the



Fig. 5.—Mrs. C. C. Black, one of the farmerettes working for M. H. Mendleson, who stands in the foreground. She is looking in the finder of the camera oblivious of the fact that Jay Smith was taking a shot of her with his ever-ready Graflex camera.

the dead matter appears mainly in the sealed cells while the unsealed larvæ look a little like the dead larvæ of American.

It is apparent that a microscope and expert bacteriologist might have to decide which the disease is; but Sturtevant says to apply treatment for European and if at the end of two or three weeks the disease comes back it may be assumed that the American foul brood is the disease; but if it effects a cure then it is a case of European. This policy will save thousands upon thousands of combs.

Farmerette Beekeepers Again.

After I showed the picture of Mendleson's farmerette beekeepers, appearing on page 76, February Gleanings, I received a letter from one of our subscribers protesting that the farmerettes were displacing men, and that it was all wrong, etc. I hardly have the space or the inclination to discuss the right or wrong of this, any more than to say, that when our wives, mothers, daughters, or any other girl or woman can be of service in a beeyard, she should have the privilege of dressing safe and sane. There are some things like queen-rearing that women can do just as well as men. In the matter of extracting with a power outfit, says Mr. Mendleson, they are just as good as men and a good deal cleaner.

The last time I told about Mr. Mendleson's farmerettes I said that a number of them had "swarmed out" meaning got married, and I intimated that he might need some more. This last must have been more than he bargained for. Over a hundred girls applied for jobs as farmerette beekeepers, and the poor man, so I am told, sat up nights writing letters saying he was awfully sorry but he had all the girls he needed.

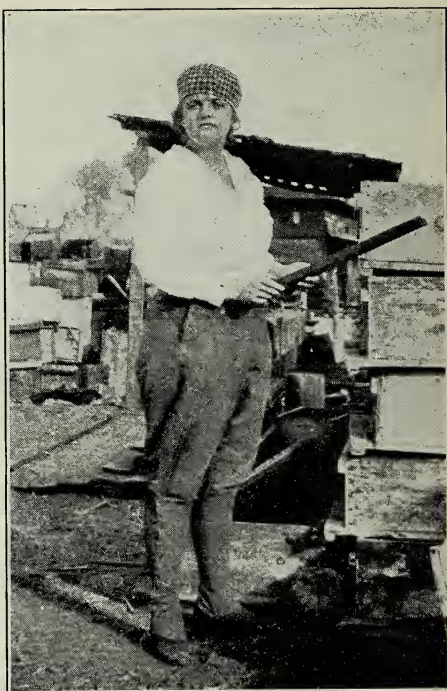


Fig. 6.—Miss Marye Culver of Calexico, Imperial County, Calif., in her farmerette bee suit. Her father, W. W. Culver, is one of the most extensive beekeepers of the Valley. Last year he took 1,000 cases of 120 pounds of honey each from 1,100 colonies. With not a little pride he told the editor of Gleanings that his daughter Marye was his right-hand man in the bee yards. Only sweet sixteen, yet while her brother was in France she took his place.



LAST month I pointed out the desirability of securing the great army of workers for the harvest quickly and just previous to the honey flow in order that most of the bees shall be young at the beginning of the harvest. In our locality the greatest amount of brood should be in the hives during the month of May, and especially the latter part of the month, since the honey flow from clover usually begins early in June.

This sudden and rapid expansion of brood-rearing, which is so important, at this time, brings prominently upon the horizon the swarming problem. It seems that the greater and more rapidly the increase in brood-rearing, the more threatening and

THE SWARMING PROBLEM

*The Ounce of Prevention and the
Pound of Cure. Some Seasons
Both are Found Necessary*

By Belva M. Demuth.

pecially after a wet May when the field bees were confined to their hives the greater portion of the time and therefore not appreciably aged by work.

Thus while good beekeeping demands a fivefold increase in population within the few weeks just preceding the honey flow, this great spurt of brood-rearing is conducive to a desire on the part of the bees to divide their forces at this time, thus defeating within a few minutes the purpose toward which we have been striving since last August. Furthermore, when we attempt to

baffling this new menace becomes. Our worst seasons for swarming have occurred when the colonies had built up most rapidly and completely, and es-

interfere with this inclination of the bees, they may resent the interference and work less vigorously just at the time when we can least afford any loafing.

This is the swarming problem afforded by our locality; with our short and usually rapid honey flow, occurring just at the height of the natural spring brood-rearing activity, it becomes a problem of no small magnitude, especially in comb-honey production. During occasional seasons, especially bad for swarming, a majority of the colonies run for comb honey may attempt to swarm, in spite of all the precautionary measures we have been able to apply. During practically every season some colonies behave as tho they thought swarming to be the sole purpose of their existence and serious work to be of minor consideration.

We look upon the actual issuing of the swarm as the culmination of a series of events within the hive which began several weeks previously. This makes it necessary to recognize the oncoming of the menace rather early in May in order to take precautionary steps to prevent its inception, tho our swarming season occurs in June.

Precautionary Measures.

By giving ample room of the right kind for brood-rearing, it is not difficult to prevent all swarming previous to the beginning of the honey flow. This room for brood-rearing should be of such a character that the brood-nest may be expanded without interruption. If a comb unfit for brood-rearing is between the brood-nest and adjacent perfect combs, it stands as a partial barrier to the extension of the brood-nest. A new comb, even tho perfect but in which brood has never been reared, if placed in the middle of the brood-chamber, sometimes offers an obstruction sufficient to cause the queen to skip it and begin work in an older and darker comb beyond. Combs with stretched and misshapen cells in the upper portion, which are so common with horizontal wiring, become a partial barrier to the extension of the brood-nest thru two stories. These imperfect cells add to the obstruction formed by the sticks and spaces already there. In any case the partial limitation of the brood-nest may be a factor to help start the bees along the downward road toward swarming. We have seen many cases of early swarming from large brood-chambers which had an abundance of comb unoccupied. Apparently such colonies swarm because the brood-nest itself was cramped by the interposition of imperfect comb, sticks, and spaces.

Some of the finest combs we have in use are relics of the days of reversible frames. They were inverted the first season, which caused the bees to extend the brood to the top-bars, and the combs were thus so strengthened by cocoons that they have never sagged. The upper portion of these combs does not prevent a free extension of the brood-nest thru two stories, which is so desirable at this time.

When the combs are perfect and their arrangement is such that the queen can work in larger and larger circles, we have not found it necessary to exchange places among them or in any way attempt to expand the brood-nest artificially to prevent early swarming.

Comfort of the Bees.

Sometimes a week of warm weather may occur before the winter packing cases are removed or before the entrances are opened wider for better ventilation in the spring, resulting in great masses of bees hanging outside the hive. Frequently queen-cells are started under such conditions, apparently in response to discomfort. Usually, however, such colonies give up swarming if more room is given.

Later, during the honey flow, of course, ventilation and shade are of great importance to insure the comfort of the bees and, we think, to reduce the tendency to swarm. We still use the old-fashioned, unsightly, projecting shade-boards on our hives during the honey flow to prevent the direct rays of the sun from striking the hive cover and the sides of the supers. At the same time the entrance is opened at the full $\frac{3}{8}$ -inch depth and the hives are shoved forward on the bottom-boards to allow a similar opening at the back, or the hives are blocked up off the bottom-boards by means of $\frac{3}{8}$ -inch blocks. When shade-boards are not used we think it is important that the hive covers be painted white, and the paint frequently renewed to prevent the absorption and transmission into the hives of so much heat from the sun.

Effect of New Work.

In order to hold the swarming instinct in subordination the bees apparently need to have their job laid out for them far in advance, so that its completion is never in sight. If the brood-chamber is filled with brood and early honey and this early-gathered honey is being sealed down adjacent to the brood, before work is begun in the super, the bees seem to feel that their job is approaching completion and that it is time for them to swarm. To prevent this condition the supers should be put on before the beginning of the main honey flow and every inducement offered to entice the bees to begin work in them promptly. In comb-honey production, bait combs in a few sections may attract the bees into the supers before the brood-chamber is completely filled, thus bridging over the work from the brood-chamber into the super before there can be any suggestion of a completed job within the brood-chamber.

When the two-story colonies are reduced to a single story at the beginning of the honey flow we sometimes have some difficulty in inducing the bees to accept gracefully the new work in the comb-honey supers given at that time. To reduce strong two-story colonies to a single story and give comb-honey supers containing foundation only in the sections, is to invite every colo-

ny so treated to swarm under certain conditions of weather and honey flow, but if they can be induced to do a little work in the supers before the extra hive body and combs are taken away there is less difficulty. We usually give each colony two supers at the time they are reduced to a single colony, each of which is supplied with bait combs. At the same time we see that they have ample ventilation and shade, if the weather is warm; for, we believe, to hold down the swarming instinct properly, it is necessary to induce the bees to begin promptly and vigorously in the first supers. In the supers added subsequently there is little, if any, difficulty in expanding the new work ahead of the needs of the bees by placing each added super next to the brood-chamber until the foundation is drawn, then placing it on top of the other supers.

For the same reason many producers of extracted honey transplant the work of the brood-chamber into the super by raising combs from the brood-chamber into it. In the same way, when the second super is added partly filled combs from the middle of the first super may be exchanged for some of its empty ones. If in this way we can make the bees so comfortable and their work so attractive that the field workers are enticed out of the crowded brood-chamber into the fields and the younger bees are attracted out of the brood-chamber into the supers to the greatest possible extent, the brood-nest itself is so depleted of bees that the colony is comfortable and the work of the hive goes on without everybody being in everybody else's way. We want a great horde of bees in every hive during the honey flow, but do not want many of these in the brood-chamber at this time; for it seems that when too many crowd into the brood-chamber, whether they be young bees recently emerged, field bees driven in by a spell of rainy weather, or a horde of idle drones, that such crowding among the brood-combs is a breeder of mischief and discontent, which may result in swarming cells being started at an early date. This extra population needs to be given a job outside the brood-nest. If too many youngsters are crowded in the brood-nest, some producers of extracted honey remove a part of them, together with most of the brood-combs, and place them in an extra hive body above the supers, as in the Demaree plan.*

Killing Queen-Cells.

In comb-honey production after the colonies have all been reduced to a single story and given comb-honey supers we begin the weekly examination for queen-cells, which examinations are continued until the danger of swarming has passed. When any colony has progressed far enough along in the succession of events toward swarming to start queen-cells we usually feel that this may be at least partly our fault in not providing

adequate precautionary measures, tho some seasons we are inclined to blame it on the character of the honey flow and the weather. It is interesting to note, however, that as the years go by the season is blamed less and the management more for these attempts to swarm. When queen-cells are found during these weekly examinations they are destroyed, care being taken that none are missed; for if one is left in the hive the results are probably the same as tho all had been left. If the cells contain only eggs or very small larvae, we leave the colony without further treatment another week, hoping that the bees will reconsider the matter and give up the attempt. While we are often disappointed in this, yet so many colonies go thru the season without swarming after having their queen-cells destroyed once or twice that the labor of looking for and destroying these recently-started queen-cells is usually quite profitably spent.


The Pound of Cure.

If, however, well-developed queen-cells are found, we know that the trouble has developed too far for preventive measures and some remedy is necessary. Just what remedy is best to use depends so much upon the character and advancement of the season as well as upon the condition of the colony in question, that no set rule is followed. In some cases the brood is taken away from the colony, leaving most of the working force, the queen, and the supers together with the hive on the old stand, as in hiving natural swarms. Later, most of the young bees that have emerged from the removed brood are returned to the colony by some one of the well-known plans for doing this. Colonies treated in this way sometimes attempt to swarm again the same season if the honey flow is long, but there is less tendency to do this if the bees are compelled to build new combs in the brood-chamber from starters only.


In other cases the queen is removed, all queen-cells destroyed, and the colony left queenless until all its brood is sealed. At this time all queen-cells are again destroyed, and a young laying queen, reared from some colony better behaved as to swarming, is introduced. Colonies so treated are in a condition similar to the parent colony after all swarming is over and the young queen has mated and begun to lay, except that it has retained its full working force. With us these colonies do not swarm again the same season.

With either of these plans the first step is to find the queen, and the decision as to which plan will be used is often made while doing this. We note a growing tendency toward killing the queen in colonies that must be treated for swarming, especially if not many colonies attempt to swarm. In extracted-honey production we would usually do so, for after we have done everything in our power to prevent swarming the swarmers may as well be weeded out in this way.

*Mr. Byer and others have used this plan. We believe there is no record that Demaree did so.—Editor.



ANNE LESTER AND DADDY LOWE, BEEKEEPERS



By Grace Allen—Chapter IV

BLACK locust, with all its swinging beauty, had come into full bloom and was filling the earth with its fragrance and grace.

"This is May Day," Anne remarked, as she and Mr. Lowe started for the beeyard one radiant morning. "The world woke up and called me early, and I went out before breakfast and played Queen of the May with Shep. Now I feel just like working with bees."

The old man smiled as he lighted his smoker. "You've got it in you, Anne, all right," he said. "I told Jack in my letter last night about how you get out all my bee books every evening, and pile those old bound volumes of bee journals around you—and dig. Just as tho you were going to school!"

"I am—to Professor Daddy Lowe!" Anne replied, adjusting her veil. "And please tell me what you are planning to do this morning," she urged, "for I'm really beginning to understand what you say."

"Well," acquiesced the old beekeeper, "about the time of locust I usually put my queens down. You see I winter in two stories mostly, and by this time the queens will have—oh, of course it varies greatly, but say from eight to sixteen combs of brood, mostly in the upper stories. So I put her down into the lower; under the queen-excluder, with most of the brood above."

"Why?" asked Anne thoughtfully.

"Well, first let me say it is by no means the only system to follow—it isn't even necessarily the best one. You'll find plenty of others recommended in the books and journals," Anne nodded. "But of all I have tried, this seems to be the best for me. You see, the queen has had unlimited room till now, and this will leave her with plenty for some time yet. From now on, I think ten combs is about enough. It wouldn't have been, from the first, tho."

"I've read about some beekeepers who use a double brood-chamber the whole season thru."

"Yes, the tendency seems to be towards larger brood-chambers. But I don't believe they need it all summer—just long enough to get this good start with brood-rearing. You see we don't care to have queens lay at their greatest capacity more than another three or four weeks."

"Oh! I thought the more brood the better."

"That is true—at the right time. But it's got to be early enough to provide bees for the harvest. Figure it out for yourself. It takes three weeks from egg-laying to raise the bees; then another two weeks before they are ready to go to the fields. That's five weeks. So eggs laid during the last five weeks of the honey flow won't give

us any bees to help bring that nectar in. Our main flow here lasts about two months. That leaves only the first two or three weeks for worth-while egg-laying. We've got about another week, now, before the main flow will be really on. So that gives us about another month for heavy laying. Do you get the idea?"

Anne nodded. "When do we put on supers?"

"Probably next week. And now let's get started. We can discuss other things as we go. If there's anything you don't understand, don't hesitate to ask."

He opened the first hive. "Anne," he said a few minutes later, holding up a comb with most of the brood sealed, but with eggs and young larvæ in the center, "judging from this comb, how long has the queen been laying?"

Anne hesitated. "Nine days," she ventured, "to have that brood sealed; longer, I suppose, if it has been sealed several days."

"She must have been laying at least four weeks, Anne," he said. "You see, she starts in the center, laying in rings towards the outside edges. So—"

"Oh, I see!" Anne cried. "The middle ones, that she laid first, have already hatched out—"

"Emerged," he corrected.

"Emerged then," she repeated; "that's three weeks; then she's laid there again and these second ones have hatched—not emerged, hatched—that's three days more; and the larvæ are evidently several days old now. Four weeks. Smart Daddy Lowe!"

"Smart Anne, you mean," he smiled. "Now let's see what we've got here." He set off the super and quickly examined each comb. "Altogether there are eleven combs here with brood in them, three combs of honey, two of pollen and four empties. Now let's put them this way. Below here, we'll put one comb of young brood, in the center; then on each side two empties, and some honey, and lastly a comb of pollen on the outside."

Finding the queen, he put her down among these combs, laid the excluder over the top, and set the second hive body on. "Now there are ten combs of brood above," he said, "and—"

"Wait a minute, Professor Lowe," Anne interrupted, "I want to ask a question. Why not put the comb down that has the queen already on it?"

"You can. Especially if she's on one you want down. This one wasn't. She was on a comb of sealed brood and I wanted that above. Because—" he waited.

Anne shook her head. "I don't know."

"It will emerge more quickly and give room above for storing honey."

Thus they went thru two more hives, Daddy Lowe explaining as he worked. But as they approached the fourth hive, Anne calmly sat down on it.

"Please, Professor Daddy Lowe," she began in her most engagingly wheedling tones, "I want to beg a great favor."

The old man laughed aloud. "Go ahead, child," he smiled, "I knew it was coming soon. Open one up and do it all alone."

Anne jumped down eagerly. "I've masticulated!" she exulted. "Now—you watch!" she urged. "And—if there's anything you don't understand, don't hesitate to ask!"

Daddy Lowe chuckled and straightway became the watcher. Carefully Anne removed the cover, loosened the combs and started her examination of the super. One by one, she set out the five combs nearest her, and then began prying the upper hive loose.

"I'll do the lifting," Mr. Lowe said, rising.

"Please, no—thank you," Anne insisted. "I've set out enough combs so I can lift the rest myself. I want to."

Grasping the two handeleats, she lifted the super off. But alas, as she lowered it, she likewise tilted it. Two combs slipped off the rabbet and crashed to the ground. Instantly the air was filled with excitedly resentful bees. Daddy Lowe came gallantly to the rescue.

"Oh dear!" wailed Anne, flushed and distressed; "I'm so sorry! See what I did the very first thing."

"No great harm done at that," Mr. Lowe reassured her. "They didn't fall far. Only one comb is broken and that not badly."

"But you got stung picking up my wreck-age."

"I was just the innocent bystander," he smiled. "But you invited me to ask questions. Do you mind explaining just why you did it?"

"Mean Professor!" she retorted, adding humbly, "Next time I shall lift it more evenly."

"And it will be easier if you don't have all the weight on one side," he suggested.

Anne finished her job without further mishap. Whereupon Mr. Lowe poured great comfort and delight into her troubled soul, by telling her to go on down that row alone, and he would start on the next row. "If you need me, I'm right here," he added.

Anne sighed rapturously. "I am beginning my career. My cup runneth over."

Most joyfully she worked, and thoroughly, hive after hive. And right in the middle of it came Theodore Robinson.

"Oh, Theodore!" the girl cried eagerly, her enthusiasm sweeping away all other feelings. "I'm really starting to be a bee-keeper! Isn't it splendid?"

"Perfectly lovely!" Theodore answered dryly. The ironical emphasis made Anne suddenly self-conscious. She frowned ever so slightly.

"But Theodore, just think—"

"I haven't done much else for the last month," the young man accused.

"I've been studying beekeeping, myself," said Anne sweetly. "Aren't you afraid of bees, Theodore?"

Theodore kicked a tuft of unoffending grass. "Honestly, Anne, I never thought I'd see you out in the sun this way, all—"

"All what? Perspiry and hot? Well, to be honest, I never thought it myself. But here I am, and here I'm likely to be. What are we going to do about it?"

"That's what I came to tell you. But I'm interrupting your work."

"And I can't stop right now."

"I'll wait."

She protested, but he waited. So about an hour later, having first completed her row of hives, she came out from the house, cool and dainty and refreshed. Theodore was visibly relieved.

"This is the real Anne Lester," he said. The way he said it spoke volumes.

Anne resented both the speech and the inferred volumes. "I don't agree with you," she argued. "I believe the other was the real one. This is merely the product of a quick bath and a good dressmaker. What were you going to tell me?"

"I've given up my position."

"Theodore! Have you volunteered?"

The young man's face darkened. "Anne, you know so well I can't do that! Even for you. Every deep conviction in me is against war. I shall answer my call when drafted, but my conscience will never let me go voluntarily. The bitter thing is that you will never understand."

"It's true I'll never understand how you can feel that way, about this war. But I shall always understand how you can't go, since you do feel that way," she answered.

"Thanks," he said gratefully. "And here's the rest of my news. I've hired out to Mr. Clark—you know—the big farm next this. I'm going to learn farming."

"Farming? Why Theodore, you hate it! And—it makes you hot and dirty. What ever made you think of such a thing?"

"Can't you guess, Anne?"

Anne flushed and was silent. Finally she shook her head. "You musn't change your whole life for me that way, Theodore," she protested gently. "Besides it won't do any good. Honestly it won't."

It was his turn to be silent. But after a few minutes he jumped up with the old friendly, boyish grin. "Bet you a cooky!" he challenged.

"Bet you two!" she retorted, happy at the change of mood. And she walked with him to the gate. Coming slowly back to the house, later, she looked off across the fields to the big prosperous Clark farm. And looking, she smiled, and kept on smiling. Then she nodded her head wisely.

"All right, Theodore," she murmured. "I'm neither a prophet nor the son of a prophet, but I have a new big idea. And I'm willing to bet another cooky on it."

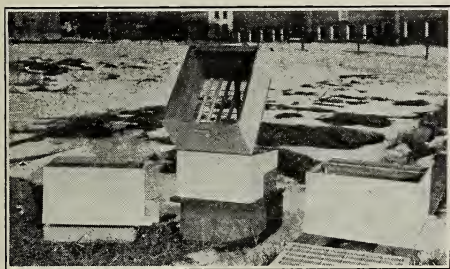


FROM THE FIELD OF EXPERIENCE

FINDING THE QUEEN

Here is a Way That Saves Time and Eye Strain
and Works Without Fail

The usual way of finding the queen is by the diligent-search method, with aching back and foggy eyes, so that a worker is magnified to the size of a queen, and a drone looks quite respectable. This has been my past experience till I had over 50 queens to find very late last fall when requeening. Necessity called for a quick method. Taking an excluder, I tacked it on the bottom of an extracting super which was placed over a hive body or box. I shook the bees into this super, and all that could pass thru the queen-excluder, going below to cluster. If they were too slow, I set another excluder on top for a cover. A few puffs of



A queen-excluder tacked on the bottom of a super makes a queen-sieve.

smoke and a good shaking up always started them down. After they were quiet, I took off the top excluder, and all the bees remaining were drones, the queen, and a few scattered workers.

In the picture the hive at the left represents the colony having the queen to be found, which is set back of the hive-stand, and an empty hive put in its place to receive the frames after shaking all the bees into the super (shown tilted up in the picture for a better view.) Carefully lift out the frames in the center of the hive first. Very often the queen may be found on one of the frames; but after becoming excited she is quite likely to leave the frames and hide in a cluster on the hive wall. After the frames are out, jar the hive body by a sudden jolt on its corner on the ground. The bees then lose their footing, and can be poured like water. It is all more quickly done than told.

Put your bees thru this strainer to get the little black queen, and then give them a beautiful Italian.

Geo. A. Brill.

Elk Mound, Wis.

BEEs AWAY UP NORTH

How an Apiary to the Northward of Winnipeg is
Successfully Conducted

For five years I have been in charge of our apiary at St. Norbert, Manitoba, Can., Trappist Monastery. I am not an experienced apiarist. In fact I am yet a novice in the art of keeping bees. Nevertheless, in 1915 and 1916 I secured a large crop of honey. Fourteen years ago one of us purchased some bees and became enraptured with the work of beekeeping; and the result of this was that he also purchased 12 ten-frame Langstroth hives of bees from which, during the next year, he secured 24 swarms, and 3,000 pounds of honey. This profit induced him to take up the business of beekeeping as a pursuit. He, therefore, bought a manual of bee culture; built a house 18x26; purchased a complete beekeeping outfit; and then secured, the first year, a crop of 200 pounds of extracted honey per colony. From 1904 to 1912 Bro. Anthony had only one poor year, and even then the profit from his colonies was sufficient to pay all expenses.

You doubtless know that in Manitoba the winter is very long, and, therefore, heavier winter losses are experienced than in the United States. One winter we lost 18 colonies out of 75; but during the same year we took 10,000 pounds of honey.

In 1912 all our hives and colonies were burned in the cellar of our guest-house, where we kept them in winter. We bought 30 other colonies from which we secured 33 swarms the first season. This was my first experience with our apiary, and since then I have remained in charge of it.

In our first wintering we were forced to keep our new colonies in a cellar that was too warm. Dysentery was the result, and I was able to save only 28 colonies. But I gave my bees close and accurate observation and hard study, and now I am glad to tell you that I received a crop of 4,200 pounds. During the following winter the cellar was not heated at all, and all the frames became mouldy. However, I saved 32 colonies, which increased to 45 and stored 420 pounds of honey.

The following spring I began with 42 colonies. The weather was fine during that spring and summer and I secured an average of more than 250 pounds per colony. The strongest colony gave us 420 pounds of honey, and several others at least 300 pounds. I also hived more than 20 swarms.

In 1916 I secured still more honey, but in 1917 was far less successful, and everywhere around us honey was very scarce, too. The spring of that year was remarkably dry, flowers were scarce, and many had no

FROM THE FIELD OF EXPERIENCE

nectar at all. Severe storms in summer and fall, particularly a hard hailstorm, put an end to the work of the bees. A heavy snow-fall during the third week of October forced me to place my colonies in their winter home on the 27th of that month.

Before explaining what I did to get such a good crop of honey in 1915 and 1916, I will say again that I am not a very skillful bee-keeper. I always try to be a man of good will. I work hard and try to do my best in everything. I also pray God to help me and to give me a great deal of perseverance in my work. My aim is to obtain from my bees the largest crop possible. In order to do so, here is the way I manage, trying at all times to avoid loss of time and money as much as possible.

First, I follow four important rules. I seek to have, first, a very productive queen; second, a strong force of bees in each hive at the time the season opens; third, the largest number of artificial colonies possible, for I suppress all natural swarming; fourth, sufficient room in the brood-chamber and in the supers.

I will not attempt to describe the apiary, which is situated in a park of some two acres, and which is divided into four alleys in the shape of a letter M. Each alley is lined by a certain number of hives, placed on iron or wooden supports about 18 inches high; and in front of each support there is put an ordinary entrance alighting-board.

As soon after the first days of April as the weather permits, I look for the queen and brood. Ordinarily I have 12 frames in

each hive. In the spring I take out three or four or even five according to the strength of the colony. The brood-nest I place near the wall of the hive, between the division-boards, leaving from 10 to 15 pounds of stores in each good hive.

When I find a colony that is very weak I put it, on a pleasant day, in the place of a very strong colony, slightly before the time for the bees to fly. I find it well to place a board before the entrance of each of the hives which I have thus transposed. Those colonies which have lost heavily in bees by this exchanging of hives, I cover warmly with paper. Besides this, in April or May (and often afterward, during the night) I thus cover our hives to protect the brood from cold. By this method I have often saved colonies which had only two or three hundred bees, and these same colonies have given me the same year 300 pounds of honey, each.

By the first of May, if the temperature is warm, I begin a new general visit to my hives, to make sure that the stores in them are sufficient; and also to clip the wings on my queens that were hatched the previous season. If there is enough room and the colony strong enough, I enlarge the brood-nest by adding more combs. By May 20 or 30, excepting those that are very weak, my hives generally have the full set of 12 frames.

At the end of May, or the beginning of June, if everything goes right, I give some empty frames to the strong colonies, placing them preferably in the supers, as they are



The apiary that's north of Winnipeg.



FROM THE FIELD OF EXPERIENCE



built there with greater regularity than those that are placed in the brood-nest. I insert these frames between the frames already built out, always taking care to leave one filled frame at each side of the walls of each hive. We use a queen-excluder.

Ordinarily swarming has not taken place before the beginning of August if everything has gone right. During my visits to the hives I always provide room for the queen to lay, by inserting in the brood-nest one or two frames that are very even or uniform. As my object is to restrain natural swarming, I lift out the combs of brood from hives that are very populous, and distribute them immediately to those colonies that are very weak.

In order to increase artificially, I make use of two plans. The first one is used when the months of May and June are favorable. About the first of June I put supers, with drawn comb, over a few of my best colonies in order that the queens may start brood in the supers. Ten or fifteen days after this, if all goes well, I go to my colony that contains my best breeding queen and take her away, with the frames of sealed brood, and with them form a new colony, strengthening it with two other frames of brood. On the eleventh day I visit the hives in which I have been preparing frames of brood, and confine each queen to her lower story, with a queen-excluder; then, from the upper stories, I take from two to four frames of sealed brood, with the adhering bees, and put one in each of the empty hives, closing each entrance with a metal grating, and putting these hives on new stands. The same day, or perhaps the day following, I give each one of them a queen-cell from my best colony, or better, a comb on which there is one or more queen-cells, and lo! the swarm is made. The hives from which the frames of brood were taken are filled with frames of foundation and left to secure a crop of honey, which often amounts to 250 or 300 pounds. Two days later, I remove the grating from the entrances of the new swarms and examine them to ascertain if the queen has hatched, and again later to find if she has mated. After the queen commences laying, I fill the hive with frames of foundation, and when all are nearly full, put on my queen-excluder and supers. Some of these artificial colonies give from 50 to 60 pounds of honey.

My second plan of artificial swarming is still more simple. Towards the end of August, at the time of the first frosts, I fill a hive body with choice combs and place it, with a queen-excluder beneath, over one of my strong colonies. The next morning the colony is removed from its stand, and the super only put in its place, moving the brood-chamber to a new location. Two days later the new colony is given a laying queen,

or a virgin if there are still plenty of drones. After this queen has commenced laying, her colony is strengthened with two frames of sealed brood from the parent stock. These young bees are the hope of the hive for the ensuing spring. This second method is especially advantageous when the weather is cool during May and June, as it does not interfere with the honey crop, and the new colony may build up to 12 frames of brood by Aug. 15. The dividing of such colonies, after the honey flow, cannot fail to render wintering easier. That is one of the advantages of the 12-frame hive.

Towards the 15th of September, when the brood is nearly all hatched, I give each hive the stores needed, leaving about 40 pounds of honey in each hive.

At the time of the heavy frosts, I cover my bees with paper—that is, old newspapers; and, at the beginning of November, I generally carry the hives that are on their summer stands to a cellar under the house.

Bro. Valentine.

St. Norbert, Manitoba, Can.



THOSE PROLIFIC STRAINS

Not so Good as the Bees That Will Gather Some Honey Even in a Drouth

In selecting a queen for breeding purposes I prefer a colony that is able to gather honey at times when most other colonies can not. In other words, I am always on the lookout for the colony that excels in a time of comparative dearth. Again, altho I am probably going contrary to the belief of the majority, I do not like an extra-prolific strain of bees. There may be such that are good storers and not given to swarming, but I have not seen such. A moderately prolific strain that will breed well early in the season, with a tendency to slacken somewhat as the flow becomes heavy, is the kind I prefer; and if I can not get as large a yield per colony in very good seasons I will keep enough more colonies to make the aggregate crop as much, and, I believe, in certain seasons more. My idea of a suitable strain of bees is one which, in a given locality, will, one year after another, give the maximum amount of honey with the minimum expense of labor and feed. Where bees are allowed to breed promiscuously, as in natural swarming, we find all the way from fairly good to almost worthless except in an extra-good location or in exceptionally good seasons. We find in apiaries of these mongrel bees the yield running from 200 pounds or more, in a favorable season, down to nothing per colony, while in a season rather unfavorable we may find little or no surplus, and most of the colonies in poor condition for winter.

Now, if we select a strain that will gather



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a little in time of comparative dearth, we shall be able to keep a more uniform number of colonies from year to year, not only getting some honey in lean seasons, but coming thru to the good seasons with a full equipment of good colonies. How many times has the writer seen people become enthusiastic over bees during a good season when almost anything in the line of bees would yield something, only to lose most or all their bees a year or two later following a more unfavorable season! This is, in my estimation, one substantial reason why the farmer should not try to keep bees. He will not, as a rule, breed bees, but will undertake to keep mongrels which can not thrive except in favorable seasons.

If any think I am fanciful in this, just turn your mind to any kind of stock. Let your stock breed hit or miss, you doing no selecting as to parentage, and what kind of stuff will you have in a few years? Yet this is just "nature's way," so much lauded by some when it comes to bees.

Dunlap, Ia.

E. S. Miles.

MANAGEMENT OF OUTYARDS

A Very Successful Beekeeper's Methods in Running Many Apiaries

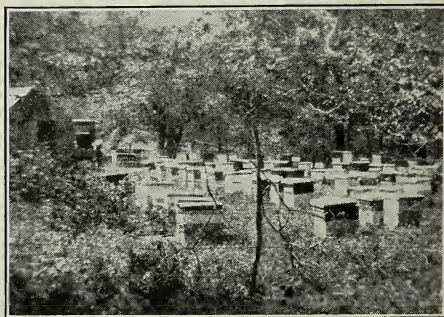
There comes a time in every beekeeper's career when he gets more bees than his home location will support, and it becomes necessary to start a series of out-apiaries. The first move in this direction will be to select a location for the out-apiary. This should have an abundance of honey-bearing flora for early feed as well as for the main or surplus yield. In our section we have elm and soft maple for early pollen, and fruit bloom and dandelions a little later. Some years these yield amply so that no feeding need be resorted to, but most years I think it pays to feed between fruit bloom and clover, especially if the colonies go into winter light. After finding a favorable locality as to honey plants, I look for an apiary site. This should be well protected by hills, trees, or brush, or all three, and should be so situated that the flying bees will not interfere with passers-by, or farming operations, as there is nothing that so exasperates the public or the landowner as an occasional sting, or a mad bee following him about. If one is so unfortunate as to be so located, and his bees trouble his neighbors, I find that a liberal dose of honey applied before said parties have time to enter complaints will nearly always forestall any ill feeling. The site should also be easy of access by auto-truck, as the time for working out-yards otherwise has gone by. A small stream or other good water supply should be near the apiary, as bees consume more water than many suppose, and having it

handy saves many bees and much time carrying it.

Now for the outfit. We will need first an extracting house to store supers, etc., and to extract honey in. I find a 12x12-ft. house about right as to size for an apiary of 100 colonies. Then, of course, we must have our pet hive. Probably for out-door wintering the 10-frame Langstroth is best; but for cellar wintering I find nothing better than the 8-frame hive, as it is easy to move, and by adding the necessary supers I find it ample for my locality.

In the spring, the first warm day after the bees have been set out of the cellar, and have had a cleansing flight, I examine all colonies as to stores, strength, disease if any, and mark them as strong, medium, and as weak or diseased, if any. Then I take my quota for each yard, according to strength. I have some yards where the flow begins 10 days before others. So I take the strongest colonies to the earliest yards first; the medium, next; and the weakest last, to the latest locations. My reason for this is to give them time to build up for the harvest. I also see that each one has, at this time (May 1 to 15, a little before fruit bloom with us) "millions of honey at our house." To facilitate rapid breeding I close down the entrance to 1 inch by $\frac{5}{8}$ on the weak ones and $\frac{5}{8}$ by 4 inches on the strong ones.

I also cover the weak ones and medium with black neponset building paper, held in place by a strip tacked around the bottom. This helps to raise the temperature so with plenty of honey they need no attention

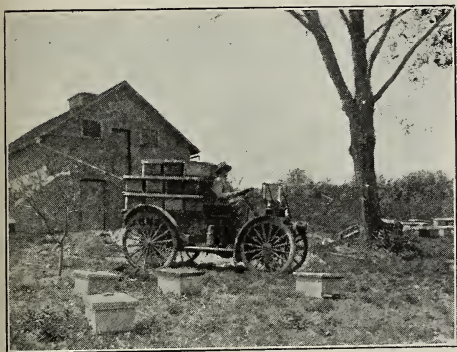


One of the Beaver out-apiaries.

till near the clover flow. Of course, the medium and strong ones should be looked after at regular intervals and given room as needed by adding supers. I give the queen the freedom of the hive till clover bloom when she is put below an excluder with two frames of unsealed brood, and the brood-nest filled with drawn combs or full sheets of foundation. Nine or ten days later I

FROM THE FIELD OF EXPERIENCE

destroy the queen-cells, if any. This practically prevents swarming with us. We raise our queens from the best colonies and requeen as soon as a queen isn't up to the standard. I make all increase from the strong and medium yards, using the nucleus



House built for the bees by Mr. Weaver.

method. This keeps swarming down to a minimum, and gets the maximum amount of honey.

I find that in this land of hills bees do not travel so far for nectar as on level country, therefore I am convinced that it pays to put the yards closer and keep less in a yard. Our locations seem to do best with about 50 in a yard, and yards 2 or 2½ miles apart.

We aim to have supers enough so that we can extract at the end of each flow, as this is the only way to raise first-quality honey, and also the best way to handle a large number of yards. For an extracting outfit we use a six-frame power extractor and a one-half horse-power engine, a capping tank, and a straining tank. This outfit is moved from yard to yard, excepting the capping box. I have one of these at each yard so the cappings can drain till I come again. I believe the honey can be extracted cheaper, quicker, and easier at each yard than to have a central plant; then I can haul the honey home any time after the extracting is all done.

I always do my requeening as I get good cells along in the summer, and by the middle of August they are prepared for winter, so far as manipulation goes. As soon as the buckwheat honey is all off, about the beginning of October, I begin to move the bees home. I have an Overland truck that carries 30 colonies at a load, and, with special bottoms and metal telescoping covers, I simply stick a V-shaped screen in the entrance and the hive is ready to move. This makes moving a pleasure.

The first severe cold spell after Nov. 10 the bees are put in the cellar. During the

winter we get hives ready and frames wired for the next season; also all wax is taken care of, and made into foundation, and the honey crop disposed of. Harry Beaver.

Troy, Pa.

[Last year Mr. Beaver treated 300 colonies affected with foul brood. He says the disease is prevalent thruout his section and he has had a constant fight to keep it subdued. In the face of this discouragement, Mr. Beaver, with the aid of his wife and a 15-year-old boy, during the past year secured a crop of 59,000 pounds and increased from 314 to 600 colonies.—Editor.]

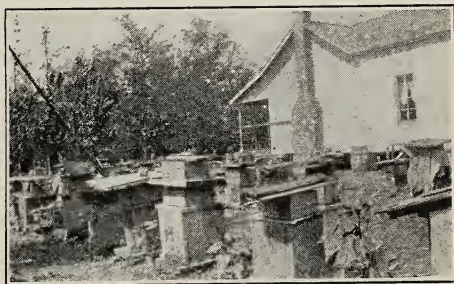


WHY THE SKYSCRAPER HIVE

Three Stories High is High Enough for Convenient Handling

The skyscraper hives lately appearing in Gleanings look good, but I can not understand how a beekeeper can handle bees that way. My supers will weigh about 70 pounds; and when you raise 70 pounds over your head for several hours you certainly will know you have been doing something. I can not see how you can go into your brood-nest with all those supers. I always take a look at my brood when I am putting on empty supers, and run my hives with two extra supers, and sometimes three, as some hives will become filled up before others. By having my hives three stories high they have plenty of room all the time, and I can look into one and see in a very few minutes what they need. Then it takes lots of bees to care for seven stories of honey at once, and they have a long-enough way to go in a hive of three stories.

I am enclosing you a picture of a yard I bought this spring. There were 99 hives—



Mr. Potts in one of his outyards.

shoe-boxes, nail-kegs, buckets, and a flour-barrel. One picture is before transferring, and the other afterward. I had 55 when I finished my job. They all had American foul brood. I bought queens and now have

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55 of the finest hives you ever saw of beautiful bees, and not a sign of foul brood. I sold \$480 worth of honey and \$120 worth of wax from them. They cost me \$200. Are they worth it? I traveled thru Tennessee, Alabama, Georgia, South Carolina, and North Carolina this summer in a car and



Outyard of J. W. Potts before transferring.

never saw a single up-to-date beeyard. Lots of colonies were in modern hives, but their owners do not take bee papers and do not run their colonies along up-to-date lines.

Gunnison, Miss.

J. W. Potts.

SOME ADVANTAGES CLAIMED

For This New Way of Fertilizing a Queen from an Upper Story

At any time in the average season, to fertilize a queen from an upper story with anything approaching a fair chance of success, it has been necessary to use a wire-cloth partition between that part of the lower story where the laying queen is and the combs of the upper story on which the virgin queen is waiting to take her mating-flight. Doolittle, in "Scientific Queen-rearing," records success at times in certain seasons, with only the queen-excluder between the two chambers, but acknowledges this is not a success under all circumstances.

In the A B C and X Y Z of Bee Culture a wire-cloth partition over the whole of the brood-nest is recommended. In the use of a wire-cloth partition the sole advantage gained is that the nucleus is helped by the heat rising from the colony below; and if the nucleus has but a small amount of brood and a virgin queen the advantage is small. The advantage would be greater in case a weak nucleus had a lot of brood in proportion to its size or a queen-cell not due to hatch for a day or two. With an impassable division you do not get the supreme advantage of giving the bees below the additional storage room of the upper story should a honey flow occur, nor the bees of the nucleus the help of the bees of the lower story in

the building of comb or drawing out of foundation to keep pace with the egg-laying power of their new queen should she mate successfully.

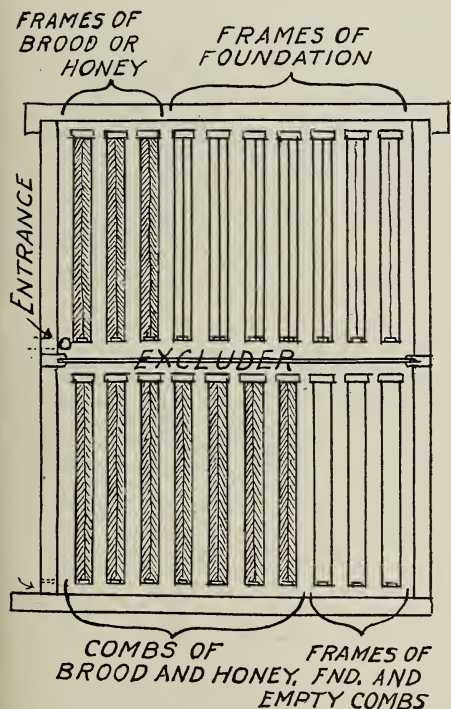
A plan which we have used with hardly a failure, and which gives the nucleus the advantage of a good deal of the heat from the colony beneath, and also the help of the bees, is as follows:

Take any colony, preferably in a 10-frame body, or even larger (it need not be a strong one, for colonies moderately strong will give good results); put all the frames containing brood to one side of the hive and fill up with empty combs, foundation or frames of honey according to the weather and condition of the colony. Over this, place a queen-excluder. On top of the excluder lay a flat piece of plain zinc or tin large enough to cover all except four or five inches of that part of the excluder under which are the frames of empty comb or foundation, so that for a ten-frame hive one would require a piece 20 inches by 10 or 11 inches. This will leave no communication between the upper story and the lower body except thru the 4 or 5 inches of uncovered queen-excluder over the empty combs. Of course, the tin or zinc should fit nice and level on the excluder so as to conserve all the heat possible. Then put on the cover, leaving the excluder and zinc still in position. Later in the evening place the nucleus on top and then cover.

The super for the nucleus should be of the same size as the one underneath—i. e., ten-frame if possible. At one end, right against the side and almost at the bottom, bore a $\frac{3}{4}$ -inch hole which is to serve for a flight-hole for the nucleus. This hole should be so located that, when the nucleus is in place, its entrance will be at the end of the hive opposite the body entrance, and will be on the same side of the hive as the brood in both stories. The nucleus may be made up in any of the well-known ways. One very good way is to go to a colony towards noon, take a frame of hatching or nearly hatching brood and one or two combs of honey with adhering bees, and place them in the nucleus hive, together with the bees shaken from two or three other combs of brood. In this way one will secure a nice lot of young bees. Next a ripe queen-cell or caged virgin should be given them. The combs containing the honey or brood should be placed on that side of the hive where the hole was bored thru the hive end and the remainder of the hive filled with frames of foundation. Do this at midday and put the nucleus on a stand near the hive on which the nucleus is to be put later, and cover till evening. Do not use any plan for making a nucleus which involves closing the flight-hole and confining the bees. There is no difficulty in making up a nucleus provided the right bees are secured, and these are the ones which have not

FROM THE FIELD OF EXPERIENCE

flown. A pint of young bees will make a thrifty nucleus, while a peck of old ones will desert and so ruin one's plans. Making up the nucleus from about 10 o'clock till noon will ensure a good proportion of young bees. Toward evening peep at the nucleus to see that sufficient bees have remained, and, removing the cover from the colony, gently place the nucleus body on the top of the plain sheet of tin and excluder, taking care that the flight-hole of the nucleus faces the way opposite the entrance of the colony beneath, and that the combs of brood and honey of both the nucleus and the colony are in both cases on the same side of the hive



Hillman's plan for fertilizing a queen from an upper story. In addition to the equipment shown in the diagram, a flat piece of tin or zinc covers all but a few inches on the right side of the excluder.

and separated by the queen-excluder covered with the plain sheet of tin.

The laying queen beneath has no opportunity of getting thru the excluder immediately beneath the nucleus, and little inducement to try to pass where the excluder is not covered with the plain zinc, as the combs beneath have no brood. The virgin above can not be worried, nor will she try to get thru the covered excluder immediately beneath her. Moreover, she has no inducement

to leave the combs of brood and honey, which are her domain, and go past bare sheets of foundation to the uncovered part of the excluder in order to get thru to the lower chamber. The position of the entrance also helps to keep her from wandering on to the uncovered excluder.

When the queen is mated she can be taken away and a cell or another virgin given. However, should the beekeeper be working for increase (and it is under these circumstances that the plan seems to be of most value), when the queen is found to be laying, the relationship of the queen of the upper hive with the bees of the lower hive seems to undergo some alteration, and the hostility to the virgin gives place to friendliness with the young fertile queen, and then, the plain piece of zinc or tin being found no longer necessary, the beekeeper may carefully and with the least possible disturbance, slide the piece of tin out from beneath the nucleus, leaving the queen-excluder in place, and thus leave the colony and nucleus to build up as recommended by Alexander in his treatment of weak colonies in the spring. If the colony underneath is of very fair strength, quite soon there will be two good colonies since the bees beneath will have full communication with the upper story thru the excluder; for in the average season, after the nucleus is put on top, the plain sheet of tin would not be necessary for more than the first ten or twelve days.

The success of the plan seems due to the virgin queen being offered no inducement to leave her own domain and endeavor to try conclusions with the fertile queen beneath her. In a great many cases, trouble is caused by the actions of the virgins or fertile queens themselves, rather than the workers. The three combs of brood and honey given the nucleus furnish the virgin ample room to content her, and the frames of foundation rebuff any attempt at extending her wanderings. The beekeeper must be very careful to get the plain sheet of metal over that part of the hive containing the fertile queen and brood and under the nucleus' combs of brood and honey, with the nucleus entrance in the direction opposite the hive entrance, otherwise the chances of success are lessened.

James Hillman.

Stonehouse, England.

[It would seem to me that the bees in the lower story would continue to expand on to their empty frames rather than to pass around the sheet of zinc and increase the nuclei above; and also that this zinc would prevent the heat rising from the colony to the nucleus. The plan of dividing the bodies with wire cloth does away with the danger of the virgin getting thru the excluder and killing the queen below. The plan has proved a success with some of the best queen-breeders.—Mel Pritchard.]

A GOOD deal is said about what a queen can do in the way of laying eggs, and it may be of interest to figure out just how many eggs she actually does average daily when she has occupied a certain number of combs. If she fills three-fourths of the available cells in a Langstroth comb, counting both sides, she will occupy 7,300 cells. If it is 21 days from the time an egg is laid until the young worker emerges from its cell, then she has laid 7,300 eggs in 21 days. Dividing 7,300 by 21 gives 347.619 as the average day's work during the 21 days. Of course she has not laid that number of eggs each day. Some days she has laid more; some days less; and there is likely to be a wide range from the minimum to the maximum.

Taking that 347.619 as a basis, and relieving the queen of the difficulty of laying less than a whole egg at a time by throwing away the fractions, we may make out a table showing just what a queen actually has averaged daily when she has filled a certain number of combs. It will be: For 1 comb, 347; for 2 combs, 695; for 3 combs, 1,043; for 4 combs, 1,390; for 5 combs, 1,738; for 6 combs, 2,086; for 7 combs, 2,433; for 8 combs, 2,781; for 9 combs, 3,128; for 10 combs, 3,476; for 11 combs, 3,824; for 12 combs, 4,172.

Dr. E. F. Phillips thinks a good queen ought to fill 10 combs. That would call for a daily stunt of 3,476 eggs, some laying. Perhaps some of us have hardly realized what a good queen ought to do. At any rate I should hardly want to call any man a slacker whose queens should average 2,000 eggs daily, keeping 6 combs filled.

Some one may say that when a queen occupies 10 combs the outside combs are not half-filled. True enough; yet these are more than balanced by inside combs more than three-fourths filled. I've seen plenty of combs that I think were nine-tenths filled. Yet I don't guarantee that "three-fourths" as anything more than a rough guess, and it will be a useful thing if some one makes accurate observations showing just what a good queen does. Then I'll gladly readjust my figures to fit the facts. I have merely shown what a queen actually does average if she fills a certain number of frames three-fourths full.

* * *

On page 232, commenting on the Michigan experiments showing a loss of four degrees of heat when one side of a hive was left unprotected, and feeling quite safe that I knew the multiplication table, I said that leaving four sides unpacked would cause a loss of 16 degrees. Then I got a letter containing this: "If this is true, why could not the physicists reach 273 below zero by

STRAY STRAWS

Dr. C. C. Miller

means of a large unpacked beehive? And since nothing is said about outside temperatures, it is just possible we might use large beehives for ice-cream

freezers on the fourth of July." When I had got up and rubbed the gravel out of my eyes, the only thing I could think of was to wonder why it had not been suggested to have hives octagonal so there would be more sides to lose heat. Anyway, some one in Gleanings office please tell us what's wrong with my figures, and what's the right thing to believe.

[Whoever criticised you for that little point must have had a lot of nerve. It seems to us that with a given outside temperature, if the inside temperature was increased at such a rate that there was no fall in temperature inside the hive (in spite of the loss of heat), then one would be practically correct in multiplying the loss of heat during a unit of time by four. Otherwise, certain other factors would need to be considered. However, the real trouble seems to have been with the original experiment. It seems to us that no very accurate results can be expected when electricity is substituted for a colony of bees.—Editor.]

* * *

After reading the clear directions for turning a frame over to look at the second side, together with the four illustrations, page 250, I got a brood-frame, set it before my assistant, Miss Wilson, and said, "Now play that this frame is covered with bees, and look for the queen." She raised the frame, with well-simulated care looked over one side, then without using any of the orthodox motions, but with a single motion, and revolving the frame on the top-bar as an axis, she turned over the frame to examine the other side. I then asked her to do it the second time. Sorely puzzled to know what I was getting at, she repeated the performance in exactly the same way. I then showed her the pictures and told her she wasn't orthodox. "I don't care for your orthodoxy" was the retort. The fact is that she has always handled combs so well fastened in the frames that they needed no care in handling. I think I usually go thru all the motions, from habit—it takes hardly any more time—but it's not a bad thing to have combs so well fastened that no especial care is needed. [Yes, having well-fastened combs does away with one objection, but there still remain two others. During a honey flow, revolving a frame on the top-bar as an axis is bound to spill out more newly gathered honey than the way suggested. But far more important than this is the chance of injuring a choice queen. We have seen more than one queen fall in just this

way. It is much easier for a queen to keep her footing on a frame held vertically than on one placed suddenly in a horizontal position.—Editor.]

* * *

That editorial, "Necessity for Comb-honey Production," page 209, sets one to thinking. The editor asks, "Will there not be an over-production of extracted with a corresponding slump in prices?" In one sense there may be over-production, the production exceeding the demand. In the fullest sense of the word, however, there is no likelihood of any over-production of honey, either comb or extracted, for many years to come; for the production is now probably several times below the amount that could be consumed, and that ought to be consumed for the health of the nation. If so much extracted is produced as to cause a slump in prices, will not the lower prices increase consumption? And will not that increased consumption eventually increase prices? So the man who considers the greatest good to the greatest number will likely have a leaning toward extracted honey; only you cannot expect too much altruism in beekeepers, and they will likely do the thing most favorable for their own pockets. At any rate, if I can make as much one way as the other, I'd a little rather use the extractor.

* * *

One of the questions most commonly asked, "When shall I begin stimulative feeding?" The average beginner seems possessed with the idea that unless something is done by the beekeeper the bees will not build up as they should. To any such I commend the words of Mrs. Demuth, page 221: "We have been thru the mill of stimulative feeding, spreading brood, and other early spring nursing, and doubt if any of this has ever been profitable. We simply try to see that every colony has what it needs for best development at this time and leave them alone." The only exception is in those places where there is a dearth so long continued that the queen will stop laying altogether unless fed.

* * *

It seems a little remarkable that the bees should have hit upon a size for worker-cells so easy to figure on—five to the inch—and also for drone-cells—four to the inch. It would be awkward to have some irregular size, as $4\frac{3}{4}$ cells to the inch. I'm in favor of changing to the metric system, but it wouldn't be so handy when talking of worker-cells to say "A worker-cell is 508-thousandths of a centimeter in diameter, and there are one and 968-thousandths cells to the centimeter."

* * *

On page 253 we are told that the larva in a queen-cell may be seen floating in a white thick milky substance, and "this chyle is more concentrated than that fed to either the drone or worker larva." Heretofore we

have been taught that during the first three days of a worker-larva it has the same food as a queen-larva, and is then "weaned," while the food of the queen-larva continues unchanged. Indeed, on page 254 Miss Fowls says that for three days the worker-larva "is fed the same kind of food as the queen-larva, but in smaller amounts." Now just what ought we to believe about it? [Yes, you are right, Dr. Miller, you see on page 254 I repented and decided to tell the truth about it.—Editor.]

* * *

On page 254 Miss Fowls tells about honey-ripening, and says, "This honey-ripening continues until nearly midnight; and during its progress there is a most delightful drowsy humming thruout the apiary." I'm not sure I ever saw mention of this in print before, and "most delightful" is precisely the right expression. Instead of calling it a humming I've been in the habit of calling it a roaring, for after a heavy day's work it can be heard several rods away from the apiary. Some word combining humming and roaring might be the proper term for it. If any of you beginners have never heard it, you've been cheated out of something that's rightly coming to you. Watch for it this summer.

* * *

You say, Mr. Editor, page 212, that N. A. Blake is right in putting the brood on top early in the fall. Correct; and it's even more important to have it there in spring and up to the time of storing surplus, whether bees are wintered out or cellared. As to keeping away the moth, I have known combs above the brood-nest to become wormy, but never below. Bees may neglect combs above, but are obliged to pass over combs below.

* * *

Isn't that a new kink in using the Alexander plan of putting a weak colony over a strong one, that Chas. D. Blaker gives, page 238? "After placing the excluder on the strong colony leave it uncovered for an hour or more until the bees have quieted down," and use no smoke. Looks good. [We believe G. C. Greiner sometimes uses the same plan—no smoke and leaving uncovered till the bees withdraw from the top.—Editor.]

* * *

If you try to keep pure Italians in a thickly settled district where everybody keeps black bees, it "will mean that in mating you will sometimes get hybrids," page 247. How would it do to change that "sometimes" to "nearly always"?

* * *

W. E. Woodruff, page 741, wants a safe and sure device for permitting a small quantity of water to escape at a time from a big tank to water bees. I can't give that, but I think I can give something better. Just throw cork chips on the top of the water.

THAT picture on the cover page of Gleanings for April looks very much like Vermont on Apr. 1, 1919, or would if there was more snow. I thought

we were booked for an early spring. March 27 was warm and balmy, snow all gone, birds singing, dust flying, and bees on the wing—when it began to rain at night and snow next morning, with a fierce north wind. Now (Apr. 1) we have an average of a foot of snow, I believe, with the wind still blowing. * * *

I have received a sample of that wonderful aluminum comb, a whole brood-frame of it. It looks fine at a little distance, but if you examine closely, it is far from perfect. The septum or base of every cell has an opening into a cell on the opposite side, so far as I could discover, and a pretty good-sized one I thought. There seem to be other serious objections to it that I will not take the room to mention. For the benefit of other beekeepers who may not have seen a sample, I will quote from a letter from one who claims to be a stockholder in the company: "I wish to introduce to you a great invention, the Aluminum Honey Comb, and pleased to say I am a stockholder and know the comb is practical and just what they claim; also, we have honest men at the head of the company. We now have orders for more than 40,000 combs that must be turned out soon—some of them from foreign countries. Ever so many very wealthy men are trying to buy out the company. One of them is Mr. Root, the most noted beeman in the world, I think; but, as it is running perfectly all right, can not be bought at any price, which gives many others a chance to make good. We are now making a special offer to beekeepers who wish to invest in stock and by doing so may have the privilege of buying the same amount in combs at a reduced price. One hundred shares at one dollar per is the smallest amount, and not over five hundred to beekeepers." I have quoted verbatim et literatim, and more might be added in the same strain. But I have quoted enough to show that the object is rather to sell stock than combs to beekeepers. No, thank you, I have other use for my money. [Any claim that Mr. Root has tried to buy out this aluminum comb company is without any warrant whatever. Mr. Crane's "no, thank you," is very timely, until more careful tests have been made.—Mng. Editor.] * * *

"I should like to try wintering with frames crosswise the hive," says D. G. Holterman, page 243. My experience has not been favorable to wintering on combs placed that way, unless a good way is made for the bees to pass across the combs. I

SIFTINGS

J. E. Crane

have found in such hives a large part of the winter stores packed in the rear combs, while the bees are apt to cluster in front where there is

less honey; and, unless the weather is very mild so there is a good chance for the bees to move back, they may starve with plenty of honey in the hive. In a cellar it may work differently. * * *

I have been over every colony out of doors in our home yard and found nearly all in excellent condition, with the exception that many were short of honey and two had died from starvation. Somehow bees have seemed to consume more honey the past winter than usual notwithstanding the mild weather. * * *

Dr. Miller, page 232, inquires how much room there was in hives with solid combs that wintered badly. Well, Doctor, truth compels me to say, not much, perhaps a half-inch. If a considerable space is left below the combs, I see no reason why bees should not winter well, especially in a cellar with solid combs above. This gives them a winter nest below instead of among the combs. * * *

That "Clever Idea," page 210, seems to me of great value. We often run short of division-boards when, if we could use an old comb and newspaper, it would be very helpful, for we have learned one of the most helpful ways of treating a small colony in the spring is to reduce their room to the size of the colony. Sometimes these will out-run much stronger colonies left on a full set of combs. * * *

Elias Fox, page 243, still doubts bees can hear, and he has plenty of good company. Let me tell why I believe they can hear. Some 70 years ago a somewhat noted astronomer in studying the orbit of Uranus discovered certain irregularities that he could only account for on the supposition that there must be another planet far beyond the orbit of Uranus. Not having a telescope large enough to detect any planet where he thought there should be one, he told another observer to look towards a certain point in the heavens and he would see a new planet. He looked and, sure enough, there was the planet within a degree of the calculated place. Now there are many things in this world that can only be accounted for on the supposition of something else that we may not yet have discovered, and the organs of hearing in bees is one of them. The fact that bees make various sounds at different times leads me to feel very sure they can hear. If pinched, a bee will squeal, but no one can tell how,

THE people of this world might be divided into two classes, not the old classification of the sheep and the goats, but those who like honey and those who do not. And, making due allowance for the exceptions that prove the rule,

did it ever occur to you that the people who are discriminating and enjoy the really fine things of life are apt to select honey as their favorite sweet? The very word honey brings to mind June days, sunshine, fragrant flowers, and the music of birds and bees. Man has accomplished wonders in improving nature's handiwork in some directions. We all enjoy the cultivated fruits and flowers which he has developed to such a state of perfection. I would not for a minute suggest that a natural apple is as fine as a Baldwin. But when it comes to concentrated sweets, man's refined, demineralized, devitalized sugar is a most unworthy competitor of nature's only concentrated sweet, honey.

A certain man, not distantly related to me, is writing interesting letters from across the water, where he has gone in the interests of the honey business. You know on a transatlantic steamer people become quite well acquainted in a very short time, and when this man's business became known he was surprised to find so many passengers very much interested in bees and honey. On board was a Greek who had been in the United States for some months in the interests of his countrymen. He talked entertainingly of Hymettus honey and the bee-keeping industry in Greece, and then recalled that in a basket of fruit, sent to him on the steamer by Henry Morgenthau, former ambassador to Turkey, was a bottle of honey. Another passenger told of receiving honey in his steamer basket. Still another related how he had been traveling in Europe four years ago with his family, and asked the steward of the Grand Hotel, Paris, to put up a box of sweets for his children to take back home. In the box were four individual bottles of honey, put up in the United States. Evidently Jacob established a precedent when he told his sons to include honey in those vessels intended for the great man of Egypt. I like to imagine that the taste of that Canaan honey brought pleasant recollections of his childhood to Joseph.

Speaking of bringing home honey from Europe reminds me of another story I heard recently. A certain college professor and his wife spent the summer in Italy some years ago. At their hotel, among other table delicacies they enjoyed some fine honey which was frequently served. When they

OUR FOOD PAGE

Stancy Puerden

And their father Israel said unto them, If it must be so, now do this; take of the best fruits of the land in your vessels, and carry down the man a present, a little balm, and a little honey, spices and myrrh, nuts and almonds.—GEN. 43:11.

started home they requested the hotel management to put them up a box of that honey to take back to their children. On the way home they discovered that the "delicious Italian honey" was not Italian at all but made in

the United States and bottled less than 30 miles from their home town.

Altho I said people could be divided into two classes, those who like honey and those who do not, there is a new form of honey which gives promise of converting the non-honey eaters into enthusiastic honey lovers. This is Cream of Honey, recently brought out by a company which does a large honey-bottling business. I serve it frequently and often send it to friends, and invariably the comments are most favorable. This is a type of remark which it often calls forth: "I have never cared for honey, but that new Cream of Honey is most delicious."

Altho difficult to convince the layman, this Cream of Honey is nothing but pure honey, nothing added and nothing removed or injured by the process to which it has been subjected. It is the finest granulated honey, treated in such a way as to insure its retaining its softness and smoothness. The word "granulated" is misleading, for in texture it is like cream fondant, white as milk, and with all the delightful aroma and flavor of the honey retained. Indeed, it has always seemed to me that the flavor of honey is slightly improved by so-called granulation, and by this new method of preparation I am told that even the honeys which have a tendency to granulate coarsely are rendered smooth. This new product should prove of the greatest value to beekeepers by stimulating the sale of honey.

Cream of Honey is somewhat softer than the brick honey, formerly sold as "honeyspread," and it is uniform in texture, a thing which could never be claimed for honeyspread. It is fine to spread on hot biscuits, waffles, griddlecakes, or bread. Mixed with chopped nuts it makes a delicious cake-filling and has the advantage of being quickly prepared. Many like it on crisp wafers. And I imagine people who like this form of honey will soon find they have acquired a liking for both comb and extracted honeys.

After saying all this in praise of Cream of Honey, don't think I am claiming it is finer than a section of the best comb honey. Man never has improved, nor do I believe he ever can improve upon nature's own original package. But I believe you will be glad with me that there is a new form of honey which promises to capture the favor of the

unfortunate ones who have not hitherto cared for honey.

NOTICE that I am giving an unusual number of recipes this issue, and I hope they will prove useful to some busy housekeeper who likes more time out of doors this beautiful month. Most of the dishes are easy to prepare, and many call for canned vegetables or fruits, which need special care in preparation to render them attractive, when we are beginning to be hungry for the fresh things.

Those housekeepers who still have a few cans of apple sauce in their storerooms will find the apple-butter recipe economical. The Puerden family like it better than the apple butter as we buy it.

Maybe someone will accuse me of inconsistency in publishing that recipe for butterscotch pie after saying what I have about honey and sugar. There are times when it seems to me that honey, like butter, is too valuable a food to be used freely in cooking, and I make butterscotch pie at one of those times. Also to be perfectly frank, I like brown sugar occasionally, and so do you, now don't you? The flavor hasn't been all refined away as in the case of granulated.

CREAM OF HONEY BISCUITS.

2 cups flour	½ teaspoon salt
2 tablespoons shortening	milk
	butter
4 teaspoons baking powder	Cream of honey

Mix the flour, salt, baking powder, and shortening, add milk to moisten, pat and roll out lightly on a floured board to half an inch in thickness, cut into small biscuits and bake in a quick oven until a light brown. Split, spread with butter and then with Cream of Honey and serve at once.

CINNAMON TOAST.

Toast slices of baker's bread a delicate brown, spread with butter and then Cream of Honey, sprinkle lightly with cinnamon, and serve at once while hot. Delicious for afternoon tea.

SALAD.

Canned sliced pineapple	Chopped peanuts
Cottage cheese	Whipped cream
Lettuce	Mayonnaise dressing — (Jan. issue)

Arrange the sliced pineapple on lettuce leaves on individual salad plates, place a ball of cottage cheese which has been rolled in chopped peanuts in the center of each slice, and arrange a ring of mayonnaise dressing mixed with whipped cream around the ball of cottage cheese. The cottage cheese balls should be about the size of walnuts. If a sweet dressing is desired it may be sweetened to taste with honey.

CANDLE SALAD.

Bananas	Preserved cherries
Canned pineapple	Mayonnaise dressing
Lettuce	with whipped cream

Arrange the canned pineapple on lettuce as in the previous recipe, stand a section of banana (about one-third) on each, on the

top of this place a candied or preserved cherry, and arrange the dressing as in the other salad. Fresh pineapple may be used in season.

STRING BEAN SALAD.

1 pint canned string beans	1 slice pimento
1 cup chopped celery or cabbage	1 slice onion
	Salad dressing

If the beans were canned whole, cut them in inch lengths, mix with the other vegetables and the dressing which may be either mayonnaise or a boiled dressing, and serve in a bowl garnished with celery leaves or lettuce.

CREAMED POTATOES AND CANNED PEAS.

1 pint can of peas	1 cup white sauce
2 cups diced potatoes	dash of paprika
	salt to taste

Drain the peas and add to the white sauce with the diced potatoes, heat thru, season and serve. The sauce should be a little thicker than when potatoes alone are used, as enough moisture will cling to the peas to thin it a little.

FOR A ONE DISH MEAL.

Canned peas	Mashed potato	Cold lamb
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Arrange a circle of fluffy mashed potato in a circle in a shallow baking dish and brush with cream or dots of butter or savory fat. Dice the cold lamb, mix with canned peas which have been drained, add enough lamb gravy to moisten, and pour into the center of the baking dish. Bake long enough to heat thru and lightly brown the potatoes. Salmon and white sauce may be substituted for the cold lamb and gravy, and a bit of onion may be used to season either dish. Served with bread and butter and salad or fruit this makes an easy meal to prepare.

APPLE BUTTER.

2 cans apple sauce	1 tablespoon sweet pickle
1 can commercial apple butter	syruup
	3 teaspoons cinnamon

Use apple sauce which has been strained thru a puree strainer or colander, and cook down one-half; add the spice, the sweet pickle syruup, and the can of apple butter, and cook until smooth. If the apple sauce has been sweetened before canning, the apple butter will be sweet enough; but if it needs additional sweetening use honey.

HELEN'S FAVORITE POTATOES.

Pare the required number of potatoes and slice lengthwise about half an inch thick, wash and lay the slices on the grate of a hot oven, and bake until brown and puffy. Do not dry the slices before baking, as the dampness seems to make them puffy like baking soaked crackers.

BEEETS WITH SAUCE.

1 quart can beets	¾ cup thin cream or
¼ cup vinegar	rich milk
½ cup juice	½ teaspoon salt
2 tablespoons butter	1 tablespoon honey
2 tablespoons flour	dash of pepper

Melt the butter, cook the flour in it and pour on half a cup of the water drained from the beets. Add the vinegar, cream and hon-

(Continued on page 334.)

EVEN as February was a good - luck month in permitting my attendance on the National Convention at Chicago, so early March gave me the gift of a visit to Medina before returning home. And things which had been to me but pictures became real factories, making hives and extractors and foundation, real apiaries with their familiar grapevines and evergreens, real offices, humming with activity. And people who had been to me but names became real people—people of friendly ways and cordial courtesies and generous hospitalities. So, tho I failed utterly to ask the Editor the things I meant to ask or to discuss the things I had planned to discuss, it was a most pleasant visit, and left me indebted to all "Rootville" for a sheaf of charming memories. Will you not come to Nashville some day, you whom I met at that time, that by our welcome we may partially indicate our deep appreciation of your courtesies to me when I visited Medina?

A great deal of the trip was by night, but fortunately coming back I crossed Kentucky by day. And loved every minute of it. Indeed, just because I thrilled to it so myself it really distressed me to see my fellow passengers lounging back in their chairs, reading baseball and pugilism, politics, and photo play journals, while the folded hills went by—all the gracious panorama of Kentucky and Tennessee. Bare woods were carpeted with leaves of other years, lovely valleys dipped gently down to friendly little rills, long bluegrass stretches lay open to the sun, great rocks showed their ledges where the hills were cut. And the colors—queer, soft, rich browns and grays with reddish hints and bluish tints and the green of cedars and spruce and young tender wheat. Then came Mr. Allen, boarding the train an hour or more out of Nashville—and home—and daffodils blooming in the corner of the yard. Wasn't it a wonderful trip indeed?

* * *

This is the first March I have ever failed to examine our bees. Tho daffodils were here to greet me on my return from the North, March 9th, it was still too cold to open the hives, and in a very few days something akin to influenza had touched me on the shoulder and frowned "You, too" at me. Thus I lost most of the rest of the month.

Peach and plum and pear were in full bloom—yes, had passed their peak—when Mr. Allen and I went out to the yard on the last Saturday in March, for a first general look. Every hive was humming merrily, pollen- or nectar-laden bees were rushing into every entrance, and every colony, from this outside view, seemed prosperous and in

Beekkeeping as a Side Line

Grace Allen

good condition. Except two. One of these had an abnormal number of dying and recently dead bees in front of the entrance; the other had a great heap of

debris—particles of destroyed comb. The first one, being in the quadruple packing case, we could not get to without spending more time and effort than we were prepared to do that afternoon. At this writing it has not yet been opened. It is interesting that the other three entrances to this packing case showed almost no dead bees at all.

The other hive that showed something wrong had wintered in a story-and-a-half single-walled hive, with the entrance wide open. This hive we opened at once to account for the pile of debris in front. We accounted all right. Mice. There was not a whole shallow comb left, each one being largely destroyed. Nor was there a cell of honey left in the super. Three full-depth combs were also partly destroyed. Yet against this disaster the bees were still bravely working, and there was brood in four or five combs, some of it sealed.

This is the first time we have ever been troubled with mice, and I suppose the wide entrance is responsible. There were six other hives in that yard with entrances not contracted, but there were no outer indications of trouble in any of the others.

How did we know for sure that it was mice? The stiff and dried remains of one was still in the hive.

* * *

How trying spring conditions can be! How warm and sunny and blossomy the days and how cold and frosty the nights. We are just coming out from a particularly cold spell here, for this season, when the mornings showed ice on water in chicken yards and left us wondering about the effect on the heavy bloom of the peach trees and the brood in the beehives. Today I find chilled brood at the entrances of several colonies here at home.

Mr. Allen just telephoned to say it is warming up nicely again and would I please take the cover off his diminutive hotbed. Having done so and finding it really pleasant outdoors, I have brought writing material out here by the bees in the sun. And I want to tell you about this side-line hotbed of Mr. Allen's. He made it a year or so ago, just the size of our solar wax-extractor, and uses the glass cover from the extractor to protect his aspiring young tomato and lettuce plants. It really works nicely, and later the cover goes back into the service for which it was made. I was interested just now to notice a solid line of bees along one edge where the glass met the rim, and I wondered whether they were there because of some odor of honey and

wax still clinging, in spite of its having been beautifully washed last fall to add to the equipment exhibit at the Fair; and then stored all winter; or whether they could have been attracted by the drops of moisture that had condensed on the glass. But that was on the under side of the glass, and surely bees have more sense than that.

* * *

Again this spring we are noticing a discouraging number of bees crawling in the grass around the hives, here at home. Of course, this is the season of many deaths in the kingdom of *Apis Mellifica*. The bees that broke thru their cells last fall can not be expected to last much longer, and they must be dying off in great numbers every day. But sitting quietly here by the hives today, I can see bees all around me in the grass, crawling, hopping, climbing, rubbing heads and abdomens and showing all the symptoms of the baffling disappearing disease.

In her talk on this disease before the Chicago and Northwestern Convention in February, Miss Fowls told of several cases where it took heavy toll of bee life and brought about a serious curtailment of the honey crop. She is undoubtedly right in urging a thoro and persistent study of the disease, to establish the proper methods of combating or, better still, of preventing it.

* * *

This is April 3rd, and two Nashville side liners have already had swarms issue, one having had both a primary and a secondary swarm from his one and only colony. This is unusually early for Tennessee, perhaps to be partly explained by the heavy honey flow last fall, partly by the mild winter, and, of course, largely by the strength of the colonies, both reporting that they were tremendously strong.

* * *

The discussion between Miss Fowls and Dr. Miller as to whether there is less danger of bees starving over winter in a 10-frame or an 8-frame hive is attracting some attention among beekeepers of this section. Without doubt the arguments on this question may be somewhat modified by local conditions—"locality." It will very seldom happen in this latitude that bees will die with honey in the hive, tho undoubtedly this very thing did happen in the winter 1917-18.

J. M. Buchanan of Franklin, Tenn., L. E. Webb of Morgantown, N. C., and other successful beekeepers of the Southeast are ardent adherents of the large brood-chamber for wintering. And thruout this section the weight of opinion leans heavily towards the greater safety of the larger hive. Especially if by wintering we include early springing. As we should. More and more bees are being wintered here either in two stories or in a story and a half, with generous stores. This is a great comfort when spring comes; there is no question of having enough supplies to tide over any run of bad weather. Often,

after brood-rearing is well begun, and hives are heavy with the precious brood, there will come a week of chill, dark, rainy weather, when the bees can not fly. At such times the beekeeper whose bees are in large brood-chambers, with ample stores, sits quietly indoors and watches it rain, unworried over his bees.

In this connection I am reminded to look up a letter I received last spring from Mr. Webb, who, by the way, came thru the severe winter of a year ago with 100 per cent perfect wintering. Here are extracts from his letter of last spring: "We had (this spring) a couple of weeks of cold frosty rainy weather, and still more bees died thruout the country, running entirely out of stores with a lot of brood. Here again my big hives having a bountiful supply left, came right thru it with flying colors. Fruit bloom was killed, too, so the large amount of stores in the big hives is what saved the day and kept brood-rearing up while the small-hive colonies were starving all over this section of the State." That was a disastrous spring, following a disastrous winter, and the big brood-chambers, with their generous stores, certainly made a record, right in the midst of tragically severe losses all around.

Another thing, these big hives don't need examination so early in the spring. There is plenty of room for brood-rearing as well as supplies. Whereas in an 8-frame hive, or even a single 10-frame one, early examination is necessary; because if there is still considerable honey left, then brood-rearing is necessarily restricted by lack of room; or, if there is plenty of room for brood-rearing, it must be because stores are pretty low.

* * *

I can not resist commenting on the splendid spirit of open-mindedness shown by Mr. Crane on page 233 in the matter of shallow supers. It may not be a matter of great importance whether Mr. Crane uses shallow or full-depth supers, but it is important for each one of us to be unprejudiced and open to conviction. A frank right-about-face in a man who thinks at all is always evidence that he has been using his brains instead of his first impressions or his pet prejudices.

* * *

"We have used great words," once Wilson said,
 "Of Brotherhood and Justice wove a creed;
 We dare not fail to equal word with deed
 Lest rout and ruin o'er the world be spread."

There shall be no such ruin. He has led
 The world's old aching heart to know its need,
 And what high ends are worthy youth
 should bleed,
 And how we must be faithful to our Dead.

Now men who mingle in the market place
 Shall feel perchance this new-born stirring
 thrill

Of Brotherhood atingle thru the race.
 And Justice on each plain and pleasant hill
 May find a home; while under friendly trees
 All peacefully shall hum the homing bees.



FROM NORTH, EAST, WEST AND SOUTH



In Northern California.—Your correspondent must take exception to some remarks found in E. R. Root's article entitled "California's Bee Problems," in April Gleanings. Mr. Root in writing about conditions as he sees them in the southern part of the State unfortunately gives the impression that the same hold true "all over the State." Our bees here have certainly held their own during the winter where it is, at least, as cold and there is no protection, and where there are thousands of colonies that had eight frames of brood during March. Weak colonies at this time are the result of poor management and disease. The writer agrees with Mr. Root that bees should be reduced to one story and should be protected during winter—not so much to prevent the loss of colonies or loss of bees but to secure a saving in the amount of stores consumed. The loss of heat generated by the bees and the lack of protection from cold cause increased consumption of honey. Aside from disease our winter losses rarely exceed three per cent. The problem of so many of our beekeepers is to retard early breeding and some are advocating mere three- and five-frame nuclei in the spring. These nuclei will breed up into strong colonies for the main honey flow in July. Of course, the migratory beekeeper that takes advantage of fruit, mustard, sage, or orange bloom wants his bees strong at all times and he can best bring this about thru protection and reduction during winter and by paying attention to young vigorous stock and proper manipulation during the rest of the year.

Regarding the sack plan of moving bees, it must be said that this would not be a wise one to follow during hot weather. (Imperial Valley beekeepers please take notice.) Even with a deep top-moving screen and the sacks well wetted, the writer does not believe it would prove satisfactory in real warm weather, and, under certain conditions, which it is sometimes impossible to prevent, he believes that bees clustering outside the hive could very easily be crushed. During hot weather we certainly could not move without top screens, and, with such in use, it would seem superfluous to sack colonies. If done it would require an alfalfa-meal, coffee, or, at any rate, a larger sack than can be purchased for 10 cents, as most of our moving is done during hot weather when the colonies are strong and absolutely require an extra body. In addition to this if the bees were liberated during the daytime there would unquestionably be a good deal of confusion.

The first annual meeting of the California Honey Producers' Co-operative Exchange was held in Los Angeles on March 31, and it is gratifying to the writer to announce that Willis Lynch of Salida, a director of

the Central Valley Producers' Co-operative Exchange was elected president of the State organization. Fred K. Howard, a director and secretary-manager of the Southern Valley Honey Producers' Co-operative Exchange, another northern local, was also chosen as a member of the State Board. The meeting was very successful, and members of all locals are to be congratulated upon the selection of the new board. It is a board not only representative of all sections, but is likewise made up of men truly capable, and men that will devote their time conscientiously and earnestly to the cause of co-operative marketing. The directors feel that all members will be more than pleased both as to quality and price with the ease and can chosen by Manager Chas. B. Justice of the State Exchange.

The secretary-managers of the three northern locals; namely, the Superior California, Central Valley, and Southern Valley are respectively, Mrs. Cecelia Robinson of Esparto, F. W. Burtch of Modesto, and Fred K. Howard of Hanford. All our members are urged to get in touch immediately with their local secretaries relative to the placing of their orders for cases and cans.

Modesto, Calif.

M. C. Richter.

* * *

In Southern California.—As to manipulation for May, the writer would say that ordinary April manipulations will almost suffice, owing to the lateness of the season. Much swarming is likely to occur this month, as many colonies will not get strong enough to think of swarming during April. Keep a close watch and either divide or equalize all of those colonies showing swarm cells. If you think you will have a surplus honey flow during July or August, it might be best to equalize—by a transfer of brood from the strong to the weak—until all of the colonies are up to crop-gathering strength. Then make such increase as you may desire. If you use excluders, look below for the queen-cells at least once every seven days. Put one or two frames of sealed brood above, placing the frames containing either drawn combs or foundation below. Without excluders, the queen-cells, if any are drawn, will likely be found in the super, as the queen will usually go above to lay where given a chance. After extracting starts, swarming generally gives very little trouble. If you have not already done so, you had better treat all of those diseased colonies while the honey flow is good.

There appears to be a good chance for some valuable discussion as to when is the best time to ship bees from the alfalfa, sweet clover ranges of Utah and Idaho to California. Some are of the opinion that early shipment is best—that is, just after the season closes up there. Others say



FROM NORTH, EAST, WEST AND SOUTH



around holiday time; while still others say that later would be better. Some shippers report that they have not as many bees as they had a month ago. All who have had experience know that disturbing, moving, or shipping a colony will almost always cause the queen to start laying, and brood-rearing will begin. Now it would seem that if they could so time the shipment that the rearing of the young bees would be such that the orange flow would begin just when they were old enough to get busy, the conditions would be ideal.

While we have had considerable rain during the winter and crops generally are looking well, southern California is still below normal in rainfall for this season of the year. The sages have not made the growth we would like to see, and the ground is not wet deep enough to give much reserve moisture. We cannot reasonably expect any very extensive rainfall after this time. The alfalaria, which is one of our early sources of honey, has started to blossom several times this winter; but, on account of the lack of rain, has dried up to a great extent. Since our last rain, it is again showing considerable bloom. With moisture and warm weather during the winter months, this plant often yields enough honey for the bees to build up on and to store a little as well. It is a quick-growing plant, but its roots are shallow.

The oranges are at least a month late in blooming. A prominent orange-grower told me today (March 4) that he has seen years when the dropping bloom would scatter thru the orange picking sacks as early as March 1. Today little or no bloom is out, and, unless we have very warm days, it will be a week or ten days before bloom to any extent will be seen. Usually it is several days after the buds burst open before nectar of any consequence is secreted. In those localities where there were early rains and the bees had plenty of stores, the colonies have built up well and are ready for the honey flow. The black sage has been blossoming for some time where the soil is fairly warm and moist. However, a large apiarist says that little or no nectar is being secreted—probably on account of the exceptionally cool spring.

Considerable discussion has arisen at different times concerning the promiscuous placing of decoy hives or boxes to catch swarms of bees near another man's apiary. At a recent meeting of the Board of Supervisors of Riverside County, it was decided that all boxes or hives placed in trees along the county highways must come down. It is certainly no ornament to the landscape to see the beautiful shade trees along our public roads decorated with all manner of old boxes. Quotations were read from A B C of Beekeeping showing that swarms often

go, without clustering, directly from the parent hive to a place previously selected by scouts, thereby giving the rightful owner no chance at all.

During the week of March 17-22, southern California was fortunate in having some excellent instruction in queen-rearing from Government Field Agent Jay Smith. Monday, March 17, the meeting was held in Riverside, and Mr. Smith gave a talk, with instruction in the use of the various queen-rearing appliances he had with him. Tuesday forenoon was spent in visiting apiaries, with a general discussion at the hall in the afternoon. On Wednesday the meeting was held at Redlands. The weather being rainy and cold, no attempt was made to visit the apiaries. On Thursday the meeting was held at San Bernardino. Here we were fortunate in having added to our list of instructors A. P. Sturtevant, Specialist in Bacteriology in Bee Diseases, from the department at Washington, D. C. Mr. Sturtevant has been sent to this coast especially to study the various bee diseases and is entirely at the service of the beekeepers. On Friday the meeting was held at Lamanda Park at the apiary of Mr. Stone, and on Saturday at the apiary of Mr. Mendelson of Ventura.

E. R. Root was present at all of the meetings, always ready to give any information that he could, gleaned as he said from his forty-two years of beekeeping as well as editor of *Gleanings*. These meetings have been a great help to the beekeepers. Occasionally an apiarist says he is too busy to attend meetings, but the inspiration and knowledge gained from others is worth much more than any day's work.

J. C. McCubbin, now living in Fresno but formerly of Reedley, was a recent visitor at the home of the writer. It will be remembered that our old friend "Rambler" (J. H. Martin) made his home with Mr. McCubbin before going to Cuba, where he died. Mr. McCubbin has a large collection of the pictures taken by Martin on these travels, also the plates and films. I wish somebody would take it upon himself to publish these writings, together with the pictures. It would surely be an interesting book to many western beekeepers in particular. A picture of the famous young big tree (the largest in this country for its age of 29 years) under which Martin made his home was printed on the cover of *March Gleanings*.

The writer recently visited the apiaries of Samuel Nealy, located on the great wheat fields of eastern Riverside County. Mr. Nealy is a strong advocate of migratory beekeeping. First he moved to the oranges. As soon as this excellent flow was over, he moved to the buckwheat of the desert, above Cajon Pass, getting very satisfactory returns from that source. Here he had to haul water for the bees as none was avail-



FROM NORTH, EAST, WEST AND SOUTH



able for a distance of about seven miles. The evaporation was very little, but the amount the bees would use per day was surprising, being something like 20 gallons per 100 colonies. Just as the buckwheat ceased to furnish nectar, such increase as desired was made and the apiaries moved to the wheat fields for the blue curl. Here it was also necessary to haul water. In ordinary years considerable surplus honey would be gathered, but a freak rain early in the fall, just when most of the little plants were in blossom, stopped the honey flow completely. Corona, Calif. L. L. Andrews.

* * *

In Minnesota.—The beekeepers in the southeastern part of the State held their annual meeting at Winona March 12 and 13. The meetings of this association are always interesting and profitable. Reports showed that the honey crop of last year was very far below the average, but all present seemed to think that the prospects for the coming season are excellent. The annual picnic will be held at Homer sometime in August. Several beekeepers in that locality have been experiencing the loss of young queens; that is, queens reared the previous fall. These queens die at the beginning of the honey flow. L. A. Stickney of Minnesota City reported that in 1916 he lost 14 per cent of all the queens in his apiary. In 1917 he lost 40 per cent and in 1918 the loss was 23 per cent. As a result of his experiments he believes that this loss can be checked by requeening from colonies that have not superseded their queens for two years. But why the loss? Can any one throw any light on the subject?

The Hennepin County Association held an "experience" meeting on March 27. The subject was wintering. The majority reported that their bees had been more restless than usual, but none reported severe losses. Those who had fed sugar reported better results than those who depended on honey alone. It was the unanimous verdict of those present that it is wise to feed not less than 10 pounds of sugar syrup in the fall after the aster flow is over.

Thru the hearty co-operation of the beekeepers of the State an amendment to the State apiary law has been secured, which provides for the traveling expenses of the state inspector. This will make it possible for him to hold meetings in various parts of the State, speaking on the subject of bee diseases, giving demonstrations, and in a special way emphasizing the educational part of the work, which is acknowledged by all to be very important. However, there seems to be a tendency on the part of some to overwork the educational idea. But experience teaches that the inspector must be more than an educational officer, for, while

all beekeepers ought to be instructed how to diagnose and treat bee diseases, some would not obey the instructions or even allow an inspector on their premises, were it not for the persuasive influences of wise legislation which provides a penalty for disobedience.

Chas. D. Blaker.

Minneapolis, Minn.

* * *

In Michigan.—In response to my note in the March issue of Gleanings regarding the possibility of investigating the cost of producing honey under the various conditions presented in Michigan, I am sorry to report that at this time only two beekeepers have written regarding it, one of them being an Indiana producer. If this may be considered an index of our interest in the subject, I assure you it will not be mentioned again by me.

During the last two years a large number of complaints have been received regarding the poisoning of bees by arsenical sprays. During the same period, it is known that the so-called "disappearing disease" has appeared in various parts of the State. In order that beekeepers may know positively whether or not arsenical poisoning is the cause of the trouble, the College is now prepared to make analyses of bees for arsenic. There is no charge for this work. In sending in bees, an ounce is sufficient.

On April 11 and 12, there will be held at Three Rivers, St. Joseph Co., the first two-day Beekeepers' School to be held outside of the College. Beekeepers cannot all come to the College for Short Courses, so the plan is to take the College Short Course (in an abbreviated form) to the beekeepers. This Beekeepers' School is being arranged for jointly by County Agent J. M. Wendt and the St. Joseph County Beekeepers' Association. The School will be put on for the present only in counties having a county agent or a local beekeepers' association which is willing to take the matter in charge and arrange the necessary details. This requirement is made because our extension agent, Mr. Ewell, has so many demands upon his time that he cannot afford to spend the time necessary for making local arrangements and advertising.

Some of our beekeepers practice rearing some queens in their own yards from certain selected mothers. Most beekeepers prefer to purchase queens because of the work involved in rearing them. Such beekeepers could without great trouble maintain a drone-rearing colony headed by their best queen. The next best queen could be used for queen-rearing. But why rear drones? For the very useful purpose of Italianizing the bees of the vicinity. Good drones are of more importance in general for breeding



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purposes than good queens, if there must be any difference in the quality of the stock. They are more numerous and they are not the product of cross-breeding as are the queens. They inherit all of their characteristics from their mothers. They are, therefore, more prepotent than the queens and can exercise a greater influence in up-grading the stock of the vicinity. Beekeepers in some parts of the State have almost despaired of keeping Italian stock because of the predominance of black blood around them. Their young queens mate with the black drones with a consequent quick degeneration of the stock. To such beekeepers, let me suggest the rearing of such an abundance of first-class drones that young queens of the territory gradually may become Italianized. Then the neighboring colonies may produce drones that will be more desirable. To get the maximum results from the purchase of a good queen, she should not only be used as the mother of other queens, but she should be supplied with a liberal amount of drone-comb.

Readers of these notes know that two years ago the legislature passed a law prohibiting the keeping of bees in anything but hives with movable combs. Movable frames do not insure movable combs. In apiaries where inspectors have found illegal hives, owners have been allowed a reasonable time for transferring. It now seems that nearly sufficient time has elapsed to permit all persons wishing to transfer to do so. Therefore, after July first, inspectors will carry blank warrants to be used for causing the arrest and prosecution of all persons found with bees in illegal hives in their possession. Posters warning beekeepers of the approach of the end of the period of probation are being printed, and copies will be mailed to anyone who will post them in conspicuous places. It is hoped that every colony in an illegal hive may be transferred by July first. Tell your neighbors of this. Bring the matter up in your association meetings. Send in for copies of the law. Give me the names of box-hive beekeepers so that I can send them notices. Let us try to see that all are transferred in time so that no one will have to suffer the penalty.

At the request of the legislative committee of the State Beekeepers' Association, Hon. Colin P. Campbell, former president of the organization, prepared a bill and caused it to be introduced into the legislature now in session. The bill made an amendment to the existing law so that the State Inspector of Apiaries may quarantine a diseased area of the State and require all beekeepers in the area to register their names and the locations of their bees with the township supervisor within ten days of the placing of the quarantine. In this way it is hoped to clean out the disease from some of

the areas where it is very difficult to locate all of the bees. This bill also provides for an appropriation of \$10,160 annually for the purposes of inspection. The bill has been passed by the House by unanimous vote, and the leaders in the Senate have agreed to its passage. So, by the time this is read, it is probable that the bill will have been passed and signed by Governor Sleeper. This seems to have been the psychological time for asking for substantial support from the State. The committees of the House made a searching inquiry into the present methods of education and inspection. Several members expressed themselves as regretting that a larger appropriation was not asked for. The economic necessity of encouraging beekeeping because of the value of the industry to agriculture and for the sake of the conservation of a natural food seems to be well understood by legislators both from the country and city. Our good fortune was not accidental. It is the result of the organization of the beekeepers into units which were able to clearly express to the legislators the necessity of action. May the good work continue.

East Lansing, Mich.

B. F. Kindig.

* * *

In Ontario.—At this date (April 7) conditions as to bees and honey plants, according to reports received, are about the same as when I wrote a month ago. Wherever bees have had abundance of good stores, they have wintered in fine condition—in fact, anything else was hardly possible so far as weather conditions were concerned, as we had very little real severe weather. Clover is also in good shape at this date and barring too much alternate freezing by night and thawing by day for the next three weeks, it should again be a normal crop this season.

I have just returned from visiting the bees 90 miles away from home (about 300 colonies), and the condition they were in gave me a good object lesson on the matter of wintering as related to consumption of stores during a mild winter. The bees referred to are in two apiaries four miles apart, and, since they were left last October, they were never looked at till my visit of April 3. About half of the number are in eight-frame Langstroth hives, these being all in one yard, with about 40 others of a much deeper-frame style and larger hive in general. These eight-frame colonies were all fed solid in October—at least they were all fed till they would not take any more food from the inverted pails used as feeders. The larger hives were made heavier than the eight-frame colonies but they were not fed all they would take. Of the 150 Langstroth hives, only two colonies had starved, none died from other causes, and the greater part of them were in fine shape with plenty of



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stores for the season if it is at all normal. Of the larger hives, four were starved and about half of the balance are very short; in fact I had to feed some of them at the time of my visit. It simply bears out the well-proven fact that colonies with a brood-nest nearly solid during a mild January cannot rear much brood for the simple reason that there is no room, while others with more empty comb space rear much brood, and thus wear out the old bees and use up the stores very fast. This condition is also apparent this season in two of the yards near home where there are large and small hives in each yard. The small hives fed solid in October are nearly all in fine shape, while many of the larger hives have used a very large amount of stores, and the vitality of the bees is sapped by winter brood-rearing. This is not an argument in favor of small hives over larger hives, as I prefer the latter, but it is an argument in favor of restricted brood-nests for winter and with less empty space in the combs during early winter. Another factor that has favored the smaller hive for wintering during the last two seasons in our home locality, is the question of quality of stores. The small hives all requiring stores were, of course, given sugar syrup; while the larger hives in many cases had only natural stores that proved to be poor, as it is nearly all granulated and whole combs can be found with the cappings chewed off and the poor stuff still in the cells.

In passing, I might say that the raw sugar we fed last fall proved all right where we fed some 3,000 pounds of a bright clean quality with crystals well developed. A few bags of darker color and quality of crystals more like ordinary yellow sugar did not turn out nearly as well, as considerable dysentery showed up in colonies fed with this sugar. All things considered, I think the granulated is still the safest article, provided it can be obtained.

The conditions of the honey markets are about the same as when last reported—very dull and with dealers loath to quote any kind of price on honey offered.

At the late convention in Toronto the general opinion expressed was that honey prices must be considerably cheaper this year than in the past season, and your correspondent shared these views most decidedly. While I still think honey will be cheaper, yet present prices on other articles makes one wonder just what is going to happen in the price line of food commodities. Butter at 70 cents and meats soaring higher and higher, not to mention other items such as woolen goods, etc., makes one realize that the article upon which he depends for a living cannot get **too cheap** if he intends to make a living and is forced to pay very high figures for everything he has to buy. Seemingly the present high prices of honey

have seriously curtailed home consumption; and this is a serious matter, for we cannot always depend upon export markets, while we always have the home consumers to depend upon, provided we can place our product before them at a price they think they can afford to pay for it. Retailers and wholesalers tell me the home trade is very light at present, and with our local demand bearing out their statements, I feel safe in making the claim that prices are too high for us to expect home consumption to be up to former years. Whether honey is to be high or low in price, there is certainly nothing doubtful concerning the prices of supplies, as the number of supply catalogs to hand bear mute but convincing testimony. That we are not likely to have cheaper supplies for a year or two at least, I had convincing evidence while on my trip up north looking over the bees a few days ago. While up there I met a man familiar with the lumbering game, and he told me of one firm that had just sold their season's cut of pine in the log, at a price slightly over \$40.00 per thousand feet. What that will mean in lumber prices can easily be imagined.

Markham, Ont.

J. L. Byer.

* * *

In Texas.—On March 15 Governor Hobbs signed the bill creating the experimental apiaries. This bill had been on his desk but three days, having received a unanimous vote by the Legislature. The beekeepers should feel proud of their efforts in securing its enactment. From every section of the State support was given this bill, as everyone could readily see the advantages of such work. Plans are being made to start this work immediately after the funds become available. The director of the experiment station and the State entomologist are conferring with beekeepers relative to the location of apiaries and problems to be solved in the various sections of the State. It is hoped that this work can be made of immediate benefit to the beekeepers of this State. Excellent co-operation in this work is being given by the beekeepers, and such spirit will certainly aid in getting results.

On March 19 the beekeepers of Travis County organized a beekeepers' association. The meeting was assisted by the county demonstration agent. Great interest was shown in the organization, as is evidenced by the fact that 40 beekeepers from every section of the county were present. H. B. Parks, Extension Apiculturist of the A. & M. College, held several demonstrations in the county just prior to the meeting. Arrangements were made to co-operate with the State Entomologist's office to secure the appointment of a county apiary inspector. Arrangements were made for the next meeting to be a field meet.

The climatic conditions to date have been



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very favorable for a successful beekeeping year. Rains have been general and frequent so that wild flowers are abundant in all localities. In some sections flowers are blooming this year that have not been seen for two years. It is a wonderful provision of nature for seeds to hold over the unfavorable seasons.

The first of the new crop of honey was marketed in San Antonio on April 10, from Medina County. Other new honey followed closely from Wilson County. Generally speaking it seems that early honey will not be abundant. This is perhaps due to the great building up of the bees that is being encouraged practically everywhere. On every side one hears the comment on how rapidly the bees are increasing this year.

The pound-package trade has grown to some considerable proportions. Three parties already have on hand \$4000 each for bees. This demand is far in excess of the supply. The supply is further limited by the inability to get sufficient early queens.

At the last meeting of the Frio County Beekeepers' Association a unique feature was added to the organization in the form of a "clean-up" committee. This committee is to assist the inspector in the foul-brood control work. It has already shown the value of its work in taking charge of a small diseased yard, the owner of which was not financially able to comply with the law and regulations. The association thru this committee shows its interest in the disease-control work within its county. Such co-operation is most commendable and most excellent results will be obtained.

On April 1 the directors of the Texas Honey Producers' Association held their quarterly meeting. The most important topic discussed was the opening price of honey. The opening season is a critical period for honey-producers. Everyone should feel himself responsible for maintaining a good market and price by the careful disposition of his honey. Honey must not be placed on the market faster than it can be consumed. The right price can only be maintained by not rushing the entire crop of honey on the market at one time. The greatest benefit of co-operative organizations is their ability to absorb local excesses of honey and place them on the market gradually.

The beginner must remember that every colony of bees needs a great deal of attention during this month. With only a few colonies it is not wise to suffer any loss by swarming, if it is possible to manage to prevent it. In one large section of the State the beekeepers who do not want increase provide the queen with ample room in the form of an extra hive body. When a honey flow comes there are then an abundant number of bees to gather a surplus. Part of the brood, usually all of the sealed brood, is

placed in the upper hive body, and sealed frames are replaced in the lower body with frames of empty comb or full sheets of foundation.

In a small yard drones are expensive. The possible number is reduced by having good combs drawn from full sheets of foundation. If drone brood is found it should be destroyed by tearing open the cells. The bees will then clean out the injured brood.

College Station, Tex. F. B. Paddock.

In Florida.—Florida's crop of orange honey is not coming up to expectations, and tho a fair crop has been secured there are no reports of heavy yields. During the first week of the flow while cloudy weather prevailed, the honey came in with a rush, but after fair weather set in the flow slackened. Probably, the amount of honey in the State is about the same as last year, or a little more. In quality, however, this year's honey is far superior to that of last year; in fact, it is the thickest and stickiest honey we have ever produced, and great care was necessary in extracting from new combs.

Altho prices have declined there is no reason why producers should sell this crop of extra-choice orange honey at a low figure. The buyers for export are trying to secure it at about 15 or 16 cents a pound, but we can sell this year's crop in local shipments at last year's prices if we care to take a little trouble. We should remember that the bottlers and wholesale houses are stocked up with honey that was bought last year at high prices, and they cannot reduce their price to the retailer until these stocks have been disposed of. It would be poor policy to drop the price materially now, as it would interfere with the sale of stocks already on hand. Better to let the change to normal come gradually, both in buying and selling prices. Of course, the merchants will try to bring honey to the old cheap level, but we cannot allow the price to drop below 12 cents unless there is a considerable change in the cost of supplies and labor—which seems improbable. If honey should again sell at the old price of 6 cents, commercial beekeeping will no longer be profitable and the business must be carried on by the side liners.

The outlook for saw palmetto is excellent, and probably we shall get as much honey from that source as we have done from the orange. The bloom stalks seem more healthy than usual, and, as but a small proportion of the palmetto lands was burnt over, there is sure to be a big bloom.

This month is perhaps the best time for the beginner to make increase by dividing, as a three-frame nucleus will build up into a strong colony and gather some surplus in the fall.

Harry Hewitt.

Apopka, Fla.

HEADS OF GRAIN FROM DIFFERENT FIELDS

Water Saved These Bees.

Having received word that five packages of bees were at the post-office uncalled for, and were rapidly dying, I pocketed a flask of syrup and one of water, also a brush and sardine-tin, and went with first aid. I got permission to tend them. The postoffice authorities urged me to take the bees home before they all died; but I soon convinced them that water was what the bees needed most. The janitor used good judgment in placing them on a windowsill in the shade and air. He had tried a little sugar syrup at the suggestion of some one, but they did not care much for that. When I applied the water—say, but they got busy and cleaned it up about as fast as I got down the line of five cages, ready to go over them again. I had most of the post-office force on hand Sunday morning interested, and even the postmaster got worked up and tried his hand at watering them. But I learned something all right; and that is that five pounds of bees took over a pint and a half of water that morning. I went down again Monday morning, and they took a little over half a pint again then. Many of those that seemed suffocated revived, and the rest were soon in fine condition.

Decatur, Ill.

Chas. A. Black.

What Industry Can Do for a Beekeeper.

W. H. Kircher has 200 colonies. He has two kinds of hives, but each kind is by itself as seen in the picture, and the whole surroundings are a model of neatness. He produces extracted honey, has a ready market for his honey, and since he has had the small diseased apiaries about

him cleaned up he is succeeding well. The bees and some small fruit, principally currants, give him plenty to do. This is a good example of what persistence, industry, and intelligent management can do in an average Michigan location.

Ypsilanti, Mich. Edwin Ewell,
Extension Worker in Beekeeping for Mich.

Retarding the Hatching of Eggs.

In the September Gleanings, 1918, department of "Gleaned by Asking," J. B. Douglass questions: "Can bees control hatching of eggs?" He believes they can. So do I. To a weak colony, which already had lost two virgin queens (probably on their wedding flights), I gave another ripe cell together with a frame of eggs from another hive, and could observe that not all of these eggs hatched. Unfortunately also the third young queen was lost, and I was astounded to see that the bees started from the then-unhatched eggs new queen-cells (11 days later), one of them producing a beautiful young queen.

Guatamala.

Jose Gutman.

[I believe that the incubation of freshly laid eggs can be retarded by regulation of temperature. However, in this case, I think the eggs were stolen from another hive.—Mel Pritchard.]

All the Queens Were Lost.

Last year I had a peculiar experience.

With only a few colonies I have been able to go thru them quietly and carefully about once a week and keep all queen-cells cut out. Last spring I



Mr. Kircher's apiary at Morris, Mich., the result of intelligent management.

HEADS OF GRAIN FROM DIFFERENT FIELDS

proceeded as usual, and, working quietly and slowly, kept things cleaned up all the time. In spite of care in being extremely gentle, all the colonies killed their queens. I do not believe all those queens died, as I had requeened with young stock at the end of the preceding season. That is, I had requeened most of my colonies, and had, unfortunately, lost my records so I could not tell which had been so treated. But I lost every queen, without exception, just about two weeks before white-clover bloom. This, with the fact that we had an unusually dry season during sweet-clover bloom, gave me absolutely no surplus last year.

Milwaukee, Wis. Charles B. Piper.

[We have had reports of the loss of queens from several beekeepers during the past season; and we noticed that more of our queens disappeared than usual; but that all of yours disappeared in so short a period of time is surely very unusual, and we can not account for it. Handling queens, in clipping, sometimes causes a few to be destroyed, especially if there is no honey coming in at the time; but this could hardly explain such a loss as yours. A similar report was recently made by D. P. Murry (see page 538, Sept. Gleanings, 1918).—Mel Pritchard.]

The Trailer No Good for Beekeepers.

After using a trailer with my Ford for one summer, I came to the conclusion it was a poor investment for a beekeeper. The jerk-

ing motion will about ruin a car in a short time. To pay for my experience with trailers I had the pleasure (?) of replacing one axle, one drive shaft, one differential gear, and making small repairs, to say nothing about the extra wear on tires. For a man who has very little hauling to do a trailer is all right; but for a beekeeper, nothing is better than a tin Lizzie with a light delivery body.

Ed Swenson.

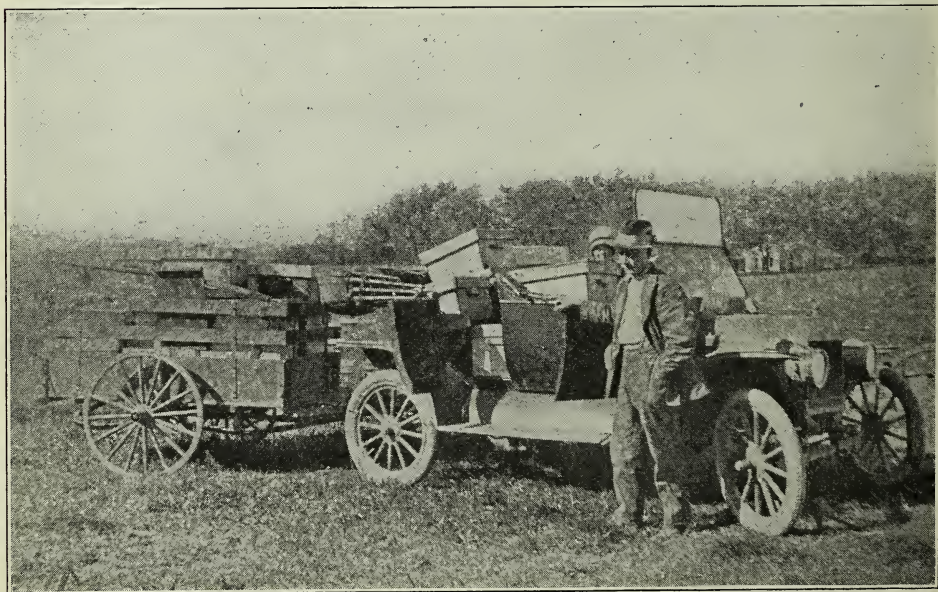
Spring Valley, Minn.

Are His Bees Immune to the Disease?

The review in the March Gleanings of articles on the Isle of

Wight disease has been of great interest to me. I have been quite sure that the disease now prevalent in the Northwest is this disease and no other. I have lost nearly 400 colonies, ending four years ago. Only seven colonies are left out of my whole number. These seven colonies had the disease, but got over it. For three seasons I kept them simply to make sure they were all right. Last season I increased again to nine colonies. I do not sell queens now, as the bees are only hybrids. In my eagerness to keep all recovered colonies I made the mistake of letting a black queen (one of the seven) survive.

Why do I write this? Just to let you know that the symptoms (page 171) are exactly like the ones we experienced, and that diseased colonies, if they recover, will not get it again if brought in contact with



Mr. Swenson and the trailer he didn't like.

HEADS OF GRAIN



DIFFERENT FIELDS

diseased matter. They may even be immune until mixed again with unimmune blood. I went very thoroly into the matter at the time, deliberately infected them all, thinking either to have some immune bees, if it were possible, or else kill them that way and then start anew again.

Necanicum, Ore.

Herman Ahlers.

[Many who report these same symptoms claim that the disease has for several years affected the same apiaries. But if some seem more immune than others it would certainly be well to breed from them. For some time attempts have been made in England to develop strains immune to the Isle of Wight disease. Altho some progress has been made, we do not think they yet have a strain actually immune.—Editor.]

high winds, however, both winter and summer. A number of important apiaries have been started within the past two or three years, owing to current high prices. We have started only in a small way, but hope to grow, and shall keep at it whether prices go up or down, just for the fundamental interest of the thing. We expect to keep right at section honey, for first-class trade; because most current advice and information seems to be the other way. On my cartons, I intend using the accompanying photo of my wife, handling a frame of bees. The trees in the background are *tamarindus indicus*, which grow well on alkali soil and bloom three or four times a year. The inclination of the trees shows the great force of the winds.

H. L. Miller.

Mendoza, Argentina.

Keeping Bees in Argentina.

Mendoza is an irrigated province at the eastern base of the Andes mountains. It has a splendid climate, and is devoted to wine-growing and the rais-



In an apiary in Argentina.

ing of fruit and alfalfa. In earlier days, honey and wax were important products; then these fell off greatly, perhaps owing to the interest in vineyards, and the fact that wine presses kill a great many bees at the end of the season. At present, the only thing that beekeepers can do is to seek outlying districts as far as possible from the presses. Snow is almost unknown here, and wintering is very simple. There are sometimes very



Chas. VanNieda, of Co. D, 315th Infantry, A. E. F., drew this picture at the front in France, telling how he used his gas mask and steel helmet in lieu of a veil and hat to secure honey from a bee tree in the historic Belleau Wood. He said the boys in his company had plenty of honey for awhile.

HEADS OF GRAIN

FROM

DIFFERENT FIELDS

How Much of a Marvel?

"Here is a marvel: Deprived of the antennæ, the worker ceases to take any delight in labor of any kind."—D. M. MacDonald, January American Bee Journal.

Here is another marvel: Deprived of an arm or leg, a human being ceases for some time to take delight in much of anything.

Medina, O.

Iona Fowls.

Approves Wesley Foster's Method.

For some years I have been using Wesley Foster's plan of winter protection for my bees, and can not speak too highly of it, tho without bottom packing. I use also another kind of hive with entrances on four sides. The hives are 16 by 20. I use a hive-bottom $17\frac{1}{2}$ by 24, two inches deep, with rear entrance $\frac{3}{4}$ by 10 during the honey flow. When packing for winter I open the rear entrance, close the front, and stand the hive on end. I so seldom lose any colonies that I do not know which kind of hive is best.

Preston, Ia.

M. D. Smith.

Do Bees Hear?

I have heard it asked (and it seems quite queer), This mooted question, "Do honey bees hear?" And then to me it does not appear That a bee can hear when she has no ear; Yet I have noticed, when I go near A colony of bees they seem to hear.

With my smoker well loaded, I have no fear; But if it wants to flunk I stay in the rear,



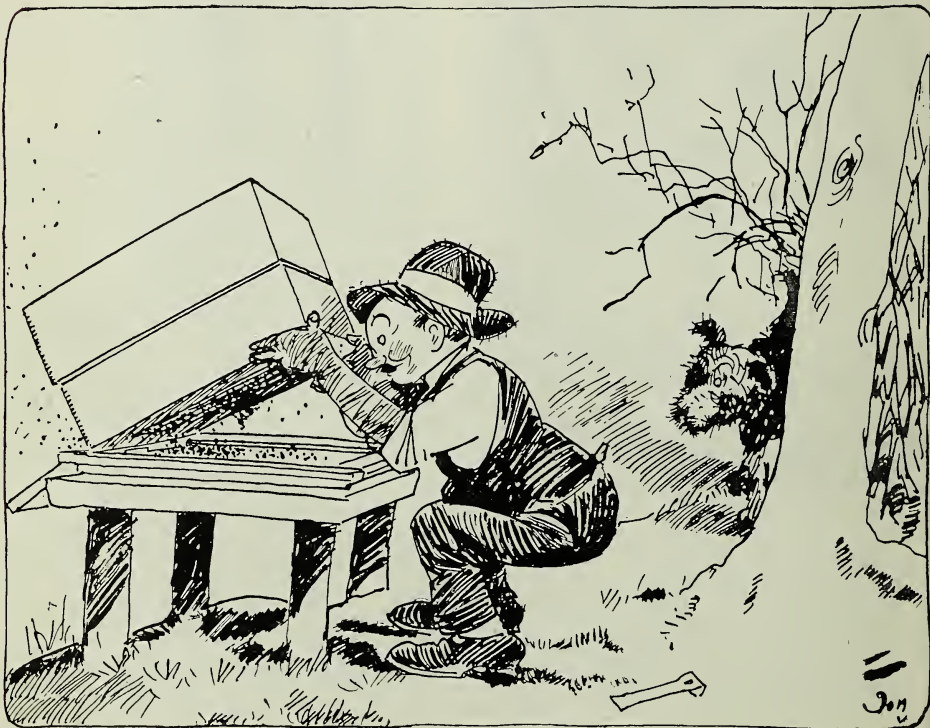
For to me it has a'wa's seemed quite clear That a bee *might* hear without any ear.

Once I decided some good queens to rear, But a sting on my nose caused a bitter tear; So I said to myself, with a vindictive leer, "I know bees can sting, if they do not hear."

REFRAIN.

To the hand-picked drone, said Miss Pretty Queen Bee,

"That soothing serenade was just witten for me."
S. E. MILLER.



THE BACKLOT BUZZER

Uncle Jerry Applebloom says he used to beep bees but he's got it fixed now, by ginger, so's they keep him.

THE Bureau of Markets reports that there have been shipped to date from Colorado between 75 and 80 cars of honey, with approximately 20 cars still on hand. These are divided as follows: 5 cars in Denver, 10 cars in the Montrose-Delta section, 1 car each at Grand Junction, Fort Collins, Sterling, and the San Juan Basin. When the entire crop for 1918 has been marketed the total movement will approximate 100 cars, which is about 25 cars more than were shipped from the 1917 crop of Colorado.

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E. J. Atchley, formerly of Beeville, Tex., is editor of a new beekeepers' publication at Riverside, Calif., called "The California Honey Bowl." It is a quarterly publication and is owned by the "Beekeepers' League of Southern California." The first number appeared Apr. 1.

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W. J. Shepard of Nelson, B. C., has just been appointed Provincial Apiarist and Chief Inspector of Apiaries for British Columbia. He will have six inspectors working under his direction.

* * *

The Western New York Honey Producers' Association will hold a spring meeting and basket picnic on Saturday, May 31, at the apiary of Emil W. Gutekunst at Colden, N. Y. One of the objects of this spring meeting is a full discussion of crop and market prospects. All beekeepers, whether members of the Association or not, are requested to attend this meeting and take part in the discussion. John N. Demuth, secretary and manager of the New York Honey Producers' Association, Inc., will be present and give an outline of the work undertaken by that Association. Howard M. Myers of Ransomville, N. Y., is secretary of the W. N. Y. H. P. A., of whom further particulars may be gleaned.

* * *

B. F. Kindig, president of the National Beekeepers' Association, sends out the following appeal to the beekeepers of the country, asking for their hearty and immediate co-operation, as follows: "During the past year the Division of Apiculture of the Federal Bureau of Entomology, Washington, D. C., of which Dr. E. F. Phillips is chief, has received its regular appropriation of \$35,000 and in addition has received an allowance of \$15,000 from the Food Production Act, a war measure. During the session of Congress just closed, the committee having in charge the appropriation for the next year cut the appropriation to \$20,000 from all sources and for all purposes. The bill, however, failed to pass. The situation now developed is as follows: Congress will again

JUST NEWS

Editors

meet in special session during May and the matter of the appropriation will come up again. Pressure by beekeepers must be brought upon all of the U. S. Rep-

resentatives and also upon every U. S. Senator, inasmuch as it was in the Senate that the cut in the appropriation was made. This is a matter that vitally concerns every beekeeper. If you do not inform your Representative or Senator as to your desires, how can you expect them to favor a \$35,000 appropriation? This is a matter which you must take a part in. Write your Congressman and Senators AT ONCE and tell them that as one of their constituents you demand that the appropriation be left as it has been. If this is not done it will be necessary for Dr. Phillips to give up the work that the 16 Extension agents are doing in the various States of the Union. Possibly one of the Extension agents has visited your State or you know of the good work they are doing. If so, tell your Representative and Senators about the good work that is being done among the beekeepers. Tell them of the diseases of bees and that the educational work of the Extension agents is absolutely necessary to bring about the control of the diseases. Speak of the thousands of beekeepers in your State and the value of the products of the apiary; the value of pollination of the fruits; the value to the country in the establishing of the industry of beekeeping on a firm basis; the saving of the tons and tons of otherwise wasted nectar; the possibilities of the industry if properly fostered by the Government; the need of Extension agents for bringing the possibilities of beekeeping before the beginners that they may develop into producers of consequence. There are a thousand things that could be said to show your Representatives and Senators that the cutting of the appropriation would be a calamity to the industry. **THIS IS YOUR PROBLEM.** The securing of this appropriation IS UP TO YOU. If you fail in your duty, the appropriation is lost. If you are not interested, why should your Congressman be? Write what you feel. Say it as forcibly as you can, **BUT DO IT NOW.** If possible, see your Congressman personally. He is at home now. Your postmaster can tell you where he lives. After you have seen him, or when he has answered your letter, I would like to hear from you and know what they have to say. This information will be of value to our legislative committee which will visit Washington in your behalf. In closing, let me again urge you not to delay this matter. All other industries are receiving their recognition, and let us now begin an aggressive campaign to place our industry in the position it deserves."

THE "Bee-Flowers of North America," by John H. Lovell, appears in the April American Bee Journal. Some who really love

nature are repelled quite as readily by an article on flowers as by one on statistics, expecting to find there a tiresome enumeration of order, families, genera, species, etc., together with other dry facts and botanical expressions which they do not understand. Such a one will be happily surprised by the most entertaining way that Mr. Lovell introduces to us the flowers especially adapted to bees. He refers to the three roles the bees play as honey-makers, fruit-makers, and flower-makers, and particularly discusses the last. He says that bees alone among the insects feed their brood on pollen, and that they have been the unconscious builders of thousands of bright-colored attractive blossoms that have added so appreciably to the happiness of the world. Studying the ways in which bees have modified flowers in the past, should, he thinks, teach us useful lessons in regard to the possibilities of the future. The real bee-flowers, he shows, are quite unevenly distributed in the different plant families. He distinguishes between bee-flowers and honey plants, and says that the great group *Compositae*, such as asters and goldenrods, are not bee-flowers since they have not adapted themselves to the bee, and yet he says no other family contains so many honey plants. Special adaptations and changes of form are mentioned in connection with the lily family, orchid family, and others. It is also stated that the golden currant changes its color when it ceases to secrete nectar.

The pea family consists almost entirely of bee-flowers, many of them being excellent honey plants, such as the clovers, vetches, and locust; also the heath and blueberry, and many of the mint family.

On color Mr. Lovell makes some surprising statements. He says honeybees and bumblebees have been observed to make 20 per cent more visits to the red and blue flowers than to the white and yellow, and that east of the Rocky Mountains and north of Tennessee there are 366 red and red-purple flowers and 519 blue and blue-purple flowers, and a large part of them are bee-flowers. Experimentally he has proved that bees can readily distinguish blue from other colors, and he believes that bees might easily learn to associate blue with flowers likely to supply nectar. It is certain, he says, that blue coloration is correlated with high specialization of the corolla, and that in the absence of insects (especially bees) the colors would never have been evolved.

* * *

The March issue of The Beekeeper's Item

THE BEST FROM OTHERS

Iona Fowls

is a special queen number. Perhaps the best article is one by H. D. Murray, describing the method of rearing queens which Dr. Miller recommends to

the ordinary beekeeper. His version is about as follows:

During an artificial or natural flow, when the queen is laying freely, and comb built readily, attach vertically a strip of foundation, about two inches wide and four long, about one-third of the way from each end of the top-bar of an empty frame. Remove a comb from the hive of the best breeder and replace with this prepared frame.

In a week or ten days this will be about three-fourths full of drawn comb, the lower line of the brood and eggs forming the letter W. Trim off the comb up to the newly hatched larvæ, and insert the comb between combs of honey and pollen in a strong queenless and broodless colony, and contract the entrance to a space large enough to admit only three or four bees at a time. On the eighth day after giving the prepared comb, count the cells and kill as many queens as you have cells, and on the tenth day distribute them.

* * *

A most interesting article on J. S. Harbison, the first commercial honey-producer of the Pacific coast, is given by Frank C. Pellett in the April issue of the American Bee Journal. In order to get Harbison's 67 colonies of bees from Pennsylvania to California it was necessary to ship them to the Isthmus of Panama, freight across, and then reship to their destination, an entire distance of 5,900 miles. Finding colonies very scarce in the West, Harbison made other importations, selling 240 colonies at \$100 each.

Mr. Harbison claimed to have invented the section for comb honey in 1857, his section being a two-pound size. Sixteen years later he shipped to Chicago his first carload of comb honey—at that time probably the largest shipment ever made by one producer. Three years later, in 1876, he shipped 100 tons (ten carloads) to New York. This wonderful shipment attracted considerable interest. Among those who saw the remarkable trainload was a young man named M. H. Mendleson whose imagination and ambition were so fired that he also was impelled to strike out for California, where, some years later, he duplicated the crop that sent him west, and is today one of the largest and most successful beekeepers of the State.

* * *

Under the title "Food for Bees" the March issue of the British Bee Journal gives the following astonishing quotations and remarks:

(1) "Toasts of bread steeped in strong ale, and put in a beehive, is very good and cheap

food" (Hartlib). (2) "Take ten figs, seething them in five pints of spring water; others seethe honey and water together" (Hyll). (3) "Beer and sugar is their best winter food" (Cotton). (4) "Turn up your hives (in winter) and sprinkle them with a little warm sugar and sweet wort" (Evelyn). "Aristotle mentions figs or any sweet things. Pliny recommends raisins or figs. Other ancients advise the use of bean flour, ground malt, roasted wardens, apples, sweet wort, and even the flesh of a chicken! Butler recommends the last-named; and so recently as the issue of Dzierzon's 'Rational Beekeeping' it was believed in as a food for bees. Who will try it?"

* * *

That buying package bees from the South does not pay is the opinion of John A. McKennon in the March Canadian Horticulturist and Beekeeper. He claims he can raise bees a good deal cheaper than he can buy them, and that he will thus have a strain better suited to his climate. To make increase as soon as the colonies are strong enough in the spring he allows the queen two brood-chambers, and above these places a queen-excluder and a super of combs, one comb being replaced by a bar of grafted cells. The next day he grafts. The first time it may be necessary to do so without jelly. Eleven days later he makes increase by using one or two combs of these frames of brood with adhering bees and a comb of honey. For making increase, the last of July he removes the supers, and over an excluder places a hive of extracting-combs containing some pollen and one frame of brood. The next morning the bottom hive is moved to a new location, and the top hive placed on the old stand and a young queen given. [We find it a better plan to graft into a queenless colony.]

* * *

Foul brood has now reached Jamaica, which has been so long free from bee diseases. In mentioning the reason for burning colonies, Arthur W. Rogers in the February Jamaica Agricultural Society speaks of the menace of the disease, and mentions how serious it has become in the neighboring island of Cuba, 90 miles away. He says that it is only due to seasonable weather conditions and abundant flora that good returns are obtained from the bees under the great scourge of foul brood now prevailing in Cuba.

* * *

It has been claimed by some that the largest and best-looking queen-cells do not hatch. S. B. Bisbee, in the March Canadian Horticulturist and Beekeeper, says this is because they are not handled properly. They are carried about the yard, wrong side up, and also, when handling the frames, the combs are turned over instead of being turned end for end. The largest and best cells, he believes, are more easily destroyed than the smaller ones because more room is left in such cells for the growth of the lar-

væ; and the larvæ, being heavier, are more easily separated from the royal jelly. He advises not distributing queen-cells until they are just about ready to hatch. [Mr. Pritchard does not think it is entirely the handling that causes the largest cells not to hatch. He believes that, on account of the unusual size of the cell, the larva drops away from the food and therefore starves. He has known the larvæ to drop, even before the cells were completely sealed.]

* * *

"Based on an original gift of 20 hives by the American Red Cross, bee-raising as an employment for soldiers recovering from wounds or fever is being developed in the vicinity of Verdun, where reconstruction is receiving expert consideration." "The Friends' unit of the American Red Cross, which is doing this specific work, hopes that in a few months it will have enough bees for every one who has kept bees before the war." —J. N. Harting, American Bee Journal, April.

* * *

In stating his objections to the long-idea hive, G. A. Deadman, in the March issue of the Canadian Horticulturist and Beekeeper, says he has used the hive both with queen-excluding division-boards and without, and has produced both comb and extracted honey; but he does not like the hive, and feels convinced that its entire principle is wrong. Bees will store honey, he says, at the sides of the brood, but never much by choice, whereas they delight to store it above.

* * *

The difference in yields between pollinated alfalfa and unpollinated is clearly shown in the Western Honeybee (March), where we learn that Mr. Warren of Nevada who owns 1,000 colonies, and grows alfalfa for seed, has this last year, from 800 acres, harvested 800 pounds of seed to the acre, which he declares is nearly four times the yield of another alfalfa-seed grower in his valley who has no bees to pollinate his crop.

* * *

Some objection has been raised to migratory beekeepers of other States moving apiaries to California for a part of the season. In the March Western Honeybee the Superior Honey Co. briefly defends such migration, and ends by inviting the California beekeepers also to increase their crops by migrating to Utah or Idaho for the alfalfa flow.

* * *

The Honey Producers' Exchange has, in the March issue of the Western Honeybee, started a five-page department regarding the progress and plans of the California Honey Producers' Co-operative Exchange.

* * *

That southern California is now to have a good queen-breeder in the person of P. C. Chadwick is stated in the March Western Honeybee. We understand the beekeepers have felt this need for some time.

"I BELIEVE British Columbia to be a fairly good place for the bee industry, if properly handled. The winters are much milder than in Ontario, and we have some very good beemen in the province. I have not seen any skyscrapers yet, altho I have seen some very good piles of supers stacked up. There was a fine display of honey at the Vancouver Exposition this year and the honey was all of first-class quality."—G. Guyer, Port Hammond, B. C.

"Last spring I bought about 75 old stands of old combs, dead bees, etc. They had been neglected by the owner and I had supposed that all were dead. But on the floor of the old shop where the bee junk was stored were two stands without supers and covers, and an old quilt so that they could not get out. In moving the outfit I found these two colonies very much alive. They could not possibly have had a flight for fully five months. I put them in clean ten-frame hives and they did finely, making over 150 pounds each. With this and other experiences I believe I can winter bees almost anywhere and not lose over 5 per cent, altho I have in the past lost many. I started in the hard winter of 1917-'18 with 38 stands and came out in the spring with 37."—Silas Ralls, Blaine County, Ida.

"Arkansas has been overlooked as regards beekeeping up to the present time, but the people are awakening to the realization of the fact that we have an ideal bee country. We have very few up-to-date or wide-awake beekeepers, and most of those we have are of the old type. They have their bees in 'gums' and 'rob the bees, and they can remember the time when 'grandpa cut a tree and got two or three tubs full of honey,' etc. But we have some beekeepers who are right up to the minute, and the climate is ideal. The honey-bearing plants are many and lasting. The worst drawback is the long heat of the summers, but our bees make honey all thru the warm season."—J. W. Rice, Sebastian County, Ark.

"Prospects are good in this part of the country now for a good year. The season is at least 20 days earlier than last year. Never had bees winter better."—Elmer Benge, Anderson County, Tex.

"The bee and honey industry in this vicinity is progressing nicely and sweet clover is getting started along the creeks and waste places, so I have no doubt that in a few years honey will be abundant in the dry season of the year."—Eugene Buseler, Washington County, Ark.

"Have handled bees since I was 18 years of age, and am now 54, still learning. Learned last summer not to pet my dog or horse, then handle brood-frames without gloves.

BEES, MEN AND THINGS

(You may find it here)

One of our native Apache-Mohave Indians told me to rub my face and hands with the crushed blossoms of the manzanita bush and the bees

would not sting me. Worked fine where the bees know the bush, but just the reverse where the bush does not grow. So it is live and learn."—John J. Jackson, Yavapai County, Ariz.

"The honey harvest in Denmark was nearly a failure in most cases this year; but the price is normal. Still the demand has been greater in spite of the price. Again we are singing the precious Christmas song, 'Peace on Earth,' and praised be the Lord that the war is ended—for never, never more to commence."—Anna Sommer, Ronne Bornholme, Denmark, Dec. 26, 1918.

"In my little farm apiary of 12 to 30 colonies I have not had a winter loss for four years. I winter on summer stands with chaff super on top, with tar paper for side and end protection, and a double bottom-board, and $\frac{5}{8}$ x 3-inch entrance."—D. W. Holland, Sumner County, Kan.

"Bee business is certainly picking up again in this locality. A 4-lb. pail of extracted is selling for \$1.05."—P. F. Conklin, Elmira, N. Y. Apr. 10.

"In the spring of 1918 I had four colonies left out of 96, and from the four I built up to 30 in the summer and sold 700 pounds of honey. I never saw such a flow of honey since I kept bees as we had last summer. I winter outside with bees packed in dry sawdust, with a board fence around the apiary six feet high for a windbreak."—Thos. Bartley, Cohocock, Ont., Can.

"Foolish question No. 6666. Do bees hear? Has any one ever heard the squeak of sealed queens answered by the piping of the free virgins on the combs? Has any one heard caged queens in separate cages in the same room pipe one to the other?"—J. H. Fisbeck, Saint Louis County, Mo.

"On Feb. 28 I unpacked my bees and placed them on a summer stand. On opening the hive March 7 I was surprised to find very little honey had been eaten and three frames of brood in every stage from eggs up to emerging bees."—B. E. Johnson, Campbell County, Va.

"The other day I went to a picture show and saw a demonstration of the handling of bees put on the screen. I thought the information would be welcomed by you. It was the first time I had been attacked by homesickness, which is so common with the boys in the service. But things looked very natural. After the show I heard remarks made about the bees, and the surprising thing to me was the number of men who did

not even know what honey looked like, never having any nor having seen it for sale. There is a wonderful opportunity for the advertising of honey in motion pictures, and after the country gets back to its normal condition there will be such a slump in the price of honey that better advertising methods will be a necessity."—Sgt. Newell Forehand, Co. C, 539 Eng., A. E. F., Zone of Advance, Latresy, France, Feb. 24, 1919.

"The past season caused a revision of opinion as to how far bees will fly and make a profitable crop. The bees of our home yard flew to sweet clover three to four and a half miles away. This is the first instance in 25 years in which we have known bees to go that far. In this case a road ran almost directly toward the clover field, the road being lined at frequent distances all along with sweet clover, so that the bees were baited, as one might say. Whether they would otherwise have found the field of sweet clover is a question."—E. S. Miles, Harrison County, Iowa.

"The 1918 honey production in British Columbia approximated 225 tons, so stated by the Provincial Department of Agriculture. This amount is small in comparison with that of American honey districts, yet it is all essentially side-line production. The professional apiarist is practically non-existent in this farthest-west Canadian province. Big-production increases here will occur when the industry gets partly on a professional basis. The side-liner's opportunity in British Columbia is not surpassed in America."—J. T. Bartlett, Kerrisdale, B. C.

"In Arizona we have had for six years a tax of five cents per colony for the support of a foul-brood inspector. Collecting the tax seems to be the only thing the inspector and his deputies have any bowels for—at least, in this part of the State an inspection consists in running up and down the rows of hives hollering 'one, two, six, nine' and then holding out a hand for steen dollars. I understand there is some kind of a muss now with the Government, as to deputies having kept all the taxes they collected so there was no money to pay the inspector's salary without dipping into other State funds. A law which permits men to collect taxes and make a report to nobody would disgrace such semi-barbarous nations as Mexico and Persia."—W. G. Hewes, Yuma County, Ariz.

"In New South Wales attention has been drawn to the fact that, owing to the amendment of the Apiaries Act in 1916, annual registration of apiaries in that State is not now necessary. When an apiary has been registered no further application for registration is necessary, but in the following cases the department must be notified; namely, where an out-apiary is established, the location of an apiary is changed, or an apiary is disposed of. The department also intimates that bees must be kept in frame

hives and that the Apiaries Act provides a penalty of £20 for neglect to observe this provision. For the last two years apiarists with bees in box hives have been treated leniently by the department, but it is now felt that beekeepers have had sufficient notice of the requirements of the law, and inspectors will in future strictly enforce the provisions of the Act."—The Melbourne Weekly Times.

"I did not have to feed a single hive last winter. I never moved a hive off the summer stand, but protect them by putting a drygoods box over each one, and that is all the protection I give them."—E. T. Josey, Walker County, Texas.

"I think the man or woman who keeps bees purely for their commercial value loses the best part of beekeeping. I keep them for company, to play with and visit with, and because I am very fond of honey; but the fun I have with them and the enjoyment I get out of it is worth more to me than the honey."—J. F. Weybright, Morgan County, Colo.

"A good many complain that their bees do not fasten the combs to the bottom-bars of the frame. If the combs are drawn from the foundation in the extracting-super, the bees will work down toward the brood-chamber, while if the work is done in the brood-chamber the combs will not be drawn down to the bottom-bar unless the bees are crowded for room."—Edwin O. Gunn, Putnam County, Ills.

"The prospects for a good honey season look very bright, owing to the extreme open winter and the prolonged warm fall. Bees have wintered well."—Arthur O. Heinrich, Nassau County, L. I., N. Y.

"I lived in southern Florida for 29 years. One year while there the saw-palmetto blooms were rich in nectar and one hive gave me 150 pounds of honey gathered from the ripe saw-palmetto berry, very rich but dark and strong. All of this that I had went to Bellevue Hospital, New York City, to be used for bronchial trouble."—Mrs. C. F. Latham, Oneida County, N. Y.

"I never knew any person to go into the beekeeping business purely for what he could get out of it that made a success of it, and I have known a good many to fail simply because they had no sentimental motive about the bees themselves."—Major Shal-lard, South Woodburn, N. S. W., Aus.

"Everything points to a good honey yield in Texas; however, the yield will not be so great as in some of the former years because of the loss of a large number of stands of bees during the past two years from drouth."—H. B. Parks, Brazos County, Tex.

"Went thru my bees on April 7 and found from three to seven frames of brood in all colonies."—Andrew Jackson, Ingham County, Mich.

QUESTIONS.—(1) A beekeeper of my acquaintance uses the second plan while I use the first. Which is the better plan of the two for strengthening a weak hive? Plan

1: In the forenoon, when the old bees are in the fields, go to a strong hive and take a frame of sealed brood with bees on it, and place it in the weak hive. If there is danger of the new bees overpowering the bees of the hive, the new bees could be placed with their brood in an upper story with a paper between. This would not be necessary unless there were practically no bees in the hive. Plan 2: Take a frame of brood, shake all bees from it, and put the brood without any bees into the weak hive. As we have sudden changes of weather, and nights are cold, would not brood thus managed be likely to chill? (2) I have read that a queen will rear brood as fast as her bees can care for it. Is this true?

Answers.—(1) If one takes sufficient care not to get the queen, together with the frame of bees when taking this frame from a strong colony, then we would say that the first plan is better than the second. However, the skillful beekeeper, by taking suitable precautions, may remove brood, without the bees, and strengthen other colonies. It should not, of course, be done with very weak colonies, nor should it be done by the beginner. An experienced beekeeper who takes the precautions mentioned on page 275 of *Gleanings for May, 1918*, will have no trouble from chilled brood. In general, however, we should feel like recommending the first plan rather than the second. (2) Early in the spring it is doubtless true that the queen rears as much brood as the bees can well care for. Later, however, bees accumulate to such an extent that it is even possible for a colony to cast a swarm and still have enough bees left to care for the brood. Even those large colonies that do not swarm have more bees than are actually necessary to take care of the brood.

Questions.(1) Is not the royal cell all finished before the egg is deposited in it? If not, how many days does it take the bees to make it quite ready for sealing? (2) Can the queen be fertilized more than once in her life? If so, under what particular conditions? If the number of spermatozoa transmitted to the queen in fertilization ranges between two and twenty million, how can this stock be exhausted and the queen become a drone-layer if the total number of eggs laid by the queen does not exceed two million? (3) Is it true that swarms can not transmit disease? (4) Using large horizontal hives consisting of hive body alone (no supers) should I use queen-excluders in order to restrict the queen and form in that way an artificial brood-nest. If so, in what part of the season? (5) Instead of a special partition board I am intending to use always combs only for the very same purpose. Shall these eventually be with or without honey? (6) I have read in a bee book that, while opening the hive in early spring or late fall, when there are no open cells containing honey, a little sugar syrup must be poured over each seam of bees to give them a chance to fill their honey-sacs under the influence

GLEANED BY ASKING

Iona Fowls

months except when it is absolutely necessary during that part of the year. The apiarist himself is responsible for nine-tenths of the robbing." This is all very well; but as the spring revision of the whole apiary must necessarily be made during the spring months, I can not reconcile these two things.

Alberto Szukiewics.

Papagaios Novos, Brazil.

Answers.—(1) At first there is no royal jelly in the cell. At the end of three days the egg hatches and the bees begin feeding the larvæ. This feeding continues for five days for queen and worker larvæ, and for six days in the case of the drone. (2) Ordinarily the queen is fertilized but once in her life; but in some instances queens are fertilized more than once before they begin laying. Whether this ever takes place after they begin laying is very doubtful, altho a few have reported such cases. Any queen that receives more than two million spermatozoa at the time of fertilization would not become a drone-layer because of exhaustion of spermatozoa, for it would not be possible for her to live long enough to exhaust that number. Even a very good queen would not be apt to lay more than 200,000 eggs during a season, and the queen would not be likely to live more than four or five years. (3) Swarming bees do not usually transmit disease; but we would not say that it can not be done. In fact, it could be very easily done if the bees having honey in their honey sacs were hived on drawn comb. Of course, if they were hived on foundation the honey that they carried with them would all be used up in building out the comb and supplying their immediate needs. (4) When using horizontal hives during the busy time, queen-excluders may be used to restrict the queen and shut off the brood-chamber from the rest of the hive. Before the opening of the honey flow it would be well to leave a large brood-chamber so that the queen will have plenty of room to lay. Later, just preceding or following the opening of the flow the queen may be given a smaller space if desired. (5) To a certain extent combs may be used in place of queen-excluders; but of course they are not as satisfactory for this purpose, since the queen could go past them either at the ends, top, or bottom. If combs are thus used the combs of honey would be better than empty combs, since the queen would not be attracted to the comb of honey, as there would be no place for her to lay. (6) This would cause the bees to be less cross if giving the syrup did not cause robbing. However, if the syrup leaked out at a crack or entrance, or if the hive were opened for any length of time so

of the smoke. Would not that cause robbing? (7) On page 31 of the Townsend bee book I read, "The danger of robbing is enough to discourage any one from opening the hives during the spring

that the outside bees from other colonies could get a taste, trouble would immediately start. For this reason the practice is not to be recommended. (7) The allusion in the Townsend bee book is simply given as a necessary caution. If the bees are fed a large amount of stores in the fall, and are left in good condition for wintering, it will not be necessary to open them very early in the spring. If the beekeeper knows that his colonies have sufficient stores, he need not open the hives except on very warm pleasant days during the first spring flow of honey. He may then find whether or not any of the colonies are queenless, and if he cares to clip the queens. But if the bees seem inclined to rob, this work may be omitted until a more favorable time. Of course, if the bees have not been properly supplied with stores, then it might be necessary to open at a time when robbing might be started. But for those cases in which the beekeeper feeds properly in the fall there is no difficulty in reconciling the two statements.

Questions.—(1) Wishing to strengthen some colonies, would it be feasible to take a frame of brood with adhering bees from each of several colonies, placing them above the colony to be strengthened with a queen-excluder between? (2) Would this work satisfactorily with newspaper division, or is the paper unnecessary? A. T. Copeland.

Washington.

Answers.—(1) Yes. (2) If the plan is applied on a rather cool day the hive may be left uncovered until the bees have gone down from the top, and then the super of brood, with adhering bees, may be gently placed on top. If this is done very carefully, so as not to disturb the bees, there will be no need of using a newspaper. If the plan is applied on a warm day when the bees would come to the top of the frames more readily, tho we realize that the paper would not always be necessary, still we should then prefer newspaper between.

Question.—Please give in Gleanings the inside width of a 13-frame Hoffman hive. I think of changing from a nine- to a thirteen-frame hive.

Kansas.

J. N. Chapman.

Answer.—Our 13-frame hives are 19½ inches square, outside measurements, and 17½ inches square inside. However, this leaves too little play between the frames. If the 13-frame hive had as much play per frame as the 10-frame hive there would need to be about one inch. After the frames have been used a while we believe this would be none too much.

Question.—What is the least number of chambers that must be placed between the upper and the lower stories to keep the old queen laying in the upper and have a young queen hatched and mated in the lower?

Pennsylvania.

H. A. Merkel.

Answer.—In the first place we should hardly care to mate the young queen from the lower story, for, altho some seem satisfied with the plan, we should fear the colony might swarm out. It would seem safer to hatch and mate the young queen from the upper story, and leave the old clipped queen

below. We believe that W. J. Sheppard advocates raising the young queen below with nothing but a queen-excluder between the two stories; but two queens in one hive has never worked very well in our experience unless the two parts of the hive were entirely separated. We think there should be at least one super between the upper and the lower brood-chambers; and the more supers there are between, the more likely are the bees of the two brood-chambers to behave as separate colonies and remain contented with their respective queens.

Question.—Is it necessary or desirable to paint my double-walled hives on the inside? I have heard it claimed that, if not painted, the inside wood would become water-soaked in the winter from the breath of the bees. Frank R. Huff.

Illinois.

Answer.—There are very few beekeepers who paint the inside of their hives. If the hive is given a slightly forward tilt, so that moisture can not collect in the hive, there will be no trouble from the walls becoming moisture-soaked; and, as for the cracks, the bees may be depended upon to fill them with propolis.

Question.—In the booklet, "How to Produce Extracted Honey," it says, "Cage the queen in the hive." Do you use an ordinary mailing-cage? and do the bees feed her thru the wire mesh?

New Jersey.

Samuel A. Smith.

Answer.—When caging a queen in a hive, either the mailing-cage or an ordinary spiral cage may be used. No candy need be placed in the cage, since the bees will attend to feeding the queen thru the openings of the cage.

Questions.—(1) When a colony casts a swarm I understand the old queen goes with the swarm. If so, is the young queen hatched then or is she still in the cell? (2) Could there not be a young queen already hatched?

Maryland.

Thos. R. Peel.

Answers.—(1) When a colony swarms, the old queen goes with the swarm, leaving in the hive capped queen-cells which will hatch in a few days. (2) This may sometimes occur, but not usually. If rainy weather had kept the colony from swarming at the time they naturally would have swarmed, it is possible that one of the virgins might have hatched. Ordinarily the swarm issues several days before the first virgin emerges.

Question.—If a hive supplied with empty comb is placed where bees can find it, is it probable that a swarm will take possession some time during the summer? A man who had a few colonies claims that a neighbor of his got three of his absconding swarms in that way last year. W. H. Craig.

Washington.

Answer.—One may easily catch stray swarms by placing decoy hives in trees in the orchard or woods near some place where bees are likely to be working. Before a colony swarms it often sends out scouts to pick out a new location. Those scouts are doubtless more apt to go in the direction in which they are accustomed to forage for honey. A tree at such a place would, therefore, be a good place in which to place the hive. Any hive will do for a decoy hive, and all the preparation you would need to

make would be to place inside the hive an old dark comb. The darker the comb, the better.

Question.—Are the golden Italian bees as good as the three-banded in regard to hardiness, honey-gathering qualities, prolificness, and gentleness?

Kansas.

H. W. Behrens.

Answer.—We do not think that the golden and three-banded Italians differ noticeably in prolificness. However, since the goldens have been bred solely for color, some strains are not as good honey-gatherers, nor are they as hardy. In gentleness they vary considerably, some being quite as gentle as the three-banded.

Question.—I know nothing about practical bee-keeping, but am anxious to learn. Would it be too great a risk to start with 12 or 15 colonies this spring?

Miss Clara S. Lacke.

Michigan.

Answer.—For one inexperienced in bee-keeping, to start with 12 or 15 colonies would be rather risky. We would not advise starting with more than four or five at most, and then gradually, as experience is gained, the number can be increased.

Question.—Each year about this time I am troubled very much by bees robbing—not my own bees, but outside bees coming in. I saw an article in a magazine a short time ago wherein the owner stated that he gave his bees a drug of some kind in order to induce the bees to rob. I feel that this might possibly be the case, if it can be done. Is it possible to do this? If so, is there any way by which I can prevent this robbing?

Pennsylvania.

Elizabeth Stine.

Answer.—Bees do not need any drugs to induce them to rob. Any warm day, when sweets are left exposed so that the bees have easy access, they soon get a taste of the sweet, and other bees notice the unusual activity and soon join them, and in a little while a regular uproar is in progress. If no other sweets are left exposed, and no honey is to be found in the field, sometimes bees will begin stealing from weak colonies whose entrances have not been properly contracted. If this is not stopped they will remove every bit of honey from the combs of the weak colonies. In most cases suitable precautions on the part of the beekeeper himself will prevent robbing.

Question.—Will a colony of bees swarm if a queen-excluder is put between the bottom-board and the brood-chamber? What good or harm will it do?

New York.

John Stoebor.

Answer.—We have sometimes known of beekeepers, who had not clipped their queens, using a queen-excluder between the bottom-board and the brood-chamber in order to prevent swarms from leaving. Of course this would not prevent a swarm from issuing, but would keep the queen from leaving, and the bees would, therefore, return. The plan is not to be recommended, for the excluder is a hindrance to the bees returning with loads of honey and pollen. More than this, it interferes to quite an extent with the ventilation of the hive on hot days.

ANSWERED BY DR. C. C. MILLER.

Questions.—(1) How may a beginner tell when queen-cells have been accepted by the queenless

colony to which they have been given, so that he can know when to give them to an upper story of a strong colony? (2) What is the best way to build a colony up to a good full-strength colony for comb-honey production in the spring?

New York.

Garold T. Pettys.

Answers.—(1) Look at the cell a day or two after it has been given. If it is not cleaned out dry, you may know it is accepted. You will have further confirmation of this in the fact that the larva is visibly larger than when you gave it. (2) If you have only one colony, with abundant stores in the hive, the hive well protected, and at least a little honey coming in from the fields, there is nothing for you to do but to let them alone and be thankful. Any meddling on your part will be as likely to do harm as good. You may have heard of stimulative feeding, and have an idea if you feed just right you can get a colony to build up twice as fast. Forget it. If there is a lack of stores in the hive, of course you must feed. If there is an utter dearth in the fields, so that nothing can be had for many days in succession, then brood-rearing may cease unless you feed at least a little. But that is not likely to happen in many places, and probably never occurs in your locality. With plenty of honey in the hive, if your queen is worth her salt she will lay all the eggs the bees can cover, and how could feeding help? If, however, you have a number of colonies, some strong and some weak, there's a good deal you can do to get all of the colonies in good condition for the harvest. The matter is very fully given in my book, 'Fifty Years Among the Bees'; and, if you don't mind my being a book agent for a few minutes, I would advise you to get the book, believing you would get the worth of your money in that one thing. I can not go fully into details here, but will try to give you the gist of it. When you find that some of your colonies have each five frames or more well filled with brood, take from each hive one or more frames of brood, choosing those that have the most sealed brood, but be sure to leave in each hive at least four frames of brood. Now as to the disposal of these frames of brood, which you have taken with adhering bees, being careful not to get the queen. You may think the weakest colonies are the neediest, and you should help them first. Don't do it. Help first the strongest of those that need help, the ones that have three frames of brood. When these are supplied, then help those with two brood, leaving those with one brood to be helped after all the others. It may be that you can help not more than one or two the first time going over. Be patient; wait ten days or so and go at it again, continuing at intervals of ten days, always keeping in mind these two things: never reduce any colony to less than four brood, and always help first the strongest of those needing help. Before you are thru you may find that some of those you first helped are in their turn ready to be helpers.

THERE is hardly a more delightful time of the year to work with one's bees than during fruit bloom. Those who have not yet obtained their bees will wish to do so this month. The best time for moving them is in the spring before the hives become heavy with honey.

It will be remembered that in the February issue the advice was given to buy entire colonies if possible, otherwise nuclei on combs, or, preferably, combless packages. Those who have purchased combless packages or who will obtain them this month will probably have no difficulty in building them up, if the queen is successfully introduced and the directions followed that accompany the bees. They must, of course, be kept supplied with stores until the honey flow. It is to be hoped that the beginner may have at least one good colony from which he may take one frame of sealed brood to give his package bees; also if they can be given frames of comb instead of frames of foundation they will build up much more rapidly. A two-pound package should have at least four combs, and a three-pound package six. More may be added later as the colony increases in size. These combs should be shoved over to the side of the hive and a division-board placed at the inside. Crowding the frames over to one side like this gives a smaller space for the bees to keep warm and therefore results in less danger of the brood chilling on cool nights. Also the hive-entrance should be contracted to but a small opening in order that the brood may not chill and die, and that robbers may be prevented from entering the hive. Bees from other colonies near sometimes overpower a small nucleus and steal their stores; but, with a small entrance about $\frac{3}{8}$ by $\frac{1}{2}$ inch, the bees of the nucleus can more easily repel such unprincipled invaders. Of course, after they build up a little the entrance may be enlarged somewhat.

Two- or three-pound packages purchased early this month, and given a little unsealed brood, will, with slow feeding, build up into good colonies in seven or eight weeks, and therefore will in many places be strong enough to gather honey during at least a part of the honey flow.

Starting with Entire Colonies.

Most beginners will doubtless be able to obtain entire colonies, which is a much better way of making a start. As stated in the February issue, such colonies should first be examined by a good beekeeper to make certain they are not diseased, and also to place what he considers a fair value on them. Their worth will depend on the style and condition of hive, strain of bees, quality of

TALKS TO BEGINNERS

By Iona Fowls

the colonies should not be taken, even as a gift.

Taking the Colonies Home.

Moving the colonies is a very simple matter in case they are in modern hives, and, if care is taken, colonies may be prepared for moving without one bee leaving its hive. Toward night or in the morning, when no bees are flying, remove the entrance-block and into the entrance shove a stiff strip of screen about three inches in width and as long as the entrance, taking pains that it fit tightly so that no bees can escape. Next gently remove the cover and immediately cover with a screen attached to a rim two inches in depth, fastening this to the hive with a long staple at each corner. This leaves a nice clustering-space over the colony, and provides plenty of ventilation. As the bees are jolted along the road they become so active that the temperature in the hive is increased considerably; and, unless plenty of ventilation is supplied, the bees may suffocate. When the weather is cool, less ventilation will be needed, and the screens may, therefore, be partly covered. The bottoms should be attached to the hives by means of a staple at each corner.

If the bees are in old out-of-date hives, with cracks here and there, special care should be taken that the bees be shut in securely; and in order to be on the safe side it might be well, when the weather is not too warm, to sack them, as described by E. R. Root, page 214, April Gleanings. We caution the beginner, however, not to handle bees after dark as there described. The expert beekeeper may occasionally do this as a matter of expediency; but from our own experience we know there is no pleasure or poetry in the operation.

When colonies are moved a distance less than a mile many of the bees often return to the old location and are lost. To avoid this, when it is desired to move a short distance colonies should be moved to a place two or three miles away, and then a few weeks later placed in the desired spot. They may be moved a very short distance by moving gradually a foot or two every two or three days.

For moving bees, the best conveyance by far is the auto. If driven carefully there is very little danger of breaking the combs. Whatever conveyance is used, the hives should be placed in such a way as to prevent the combs swinging because of sudden jolts.

Placing the Hives.

On arrival home the hives may be placed, if convenient, where there will be winter

queen, size of colony, freedom from disease, amount of stores, regularity of the combs, and amount of drone brood present. If any disease is found

protection from prevailing winds and where there is a little shade during the hottest part of the day—perhaps out in the back yard under the apple tree, but facing away from any path where people are frequently passing. Bees do not like moving objects close in front of their entrance; nor do they approve of rug-beating or tennis-playing too near their homes.

Those who live in the city may be obliged to keep their bees on the roof or in the attic. Colonies placed in an attic should be near the wall and have an outside entrance. There should also be a window that can be opened to allow the escape of bees that will collect on it whenever the hive is opened.

Colonies Need Not Annoy Neighbors.

In case any neighbor is a little timid concerning the bees, we advise placing the colonies facing a trellis or other high obstruction so that the bees will be compelled to fly high on leaving the hives. Also the neighbors should be cautioned never to leave sweets exposed where the bees may get a taste and start robbing; for, of course, such robbing would make the bees very cross. It might, moreover, be a good plan to get the neighbor somewhat interested in the bees, perhaps by giving him a little peep inside the hive on a nice warm day when the bees are gathering honey, and are, therefore, good-natured, and also by giving him a sample of the honey when the crop is harvested.

Supplying Stores.

As soon as the hives are placed, the cover should replace the top screen, and the entrance screen should be removed so that the bees may have a flight. They will need proper ventilation, but the entrance should not be too large since colonies just moved are more likely to be attacked by robbers. Probably a $\frac{3}{8}$ by 8-inch entrance would be about right. The next day or so, if it is found they are short of stores, the cover should be removed, an empty super placed over the brood-chamber, and a cake of candy left on top of the frames. The candy and tops of the frames should then be covered warmly with burlap or carpet, and the cover replaced. For such feeding we recommend the candy mentioned in an April editorial. From now until the honey flow all colonies should be kept supplied with plenty of stores in order that brood-rearing may progress rapidly.

Transferring From Old Hives.

Some time this month, before the hives become heavy with honey, and on a pleasant day when many bees are out after nectar, those colonies in old hives with unmovable frames should be transferred to modern hives. The following is an easy way of transferring:

Remove the old hive from its stand, and in its place put a new hive, facing in the same direction, and filled with frames of foundation, or preferably drawn comb. There should be one comb containing a

patch of young larvæ (unhatched bees which look like little white worms). If one has no full colonies from which to take these larvæ, he may with a little trouble get a piece of comb containing such larvæ from the old hive. After smoking the colony a little, remove the bottom-board and place the old hive over the new, tacking on strips, if necessary, so that there will be no open cracks between the two hives. Then blow smoke down thru the old story, gradually driving the bees and queen below, after which insert a queen-excluder between the two hives. A few days later examine the lower story to see whether the queen has begun laying below. If not, it is probable she is still in the upper story. To get her below, again place the old hive of brood over the lower hive, leaving out the excluder, and again drive the bees below with smoke, making certain this time that the queen also goes with the bees. Then insert the queen-excluder between the two hives, being sure to leave the excluder right (deep) side up. In 24 days after the queen has been driven below, the brood will all be hatched from the old hive, when it may be removed, and the combs saved to be rendered into wax.

When no combs are obtainable, colonies may be transferred into the new hives on to frames of foundation, and then fed continuously until the foundation is drawn out into comb; but it gives the bees a much nicer start to give them drawn combs, always making certain, of course, that the combs are not from diseased colonies.

Improving the Stock.

Good Italians may be recognized by the three yellow bands on the abdomen. This strain is gentle; they are good honey-gatherers, and quite resistant to disease. The blacks are easily distinguished by their color. They are very quick and nervous, rather cross and not very resistant to disease; perhaps not quite as good honey-gatherers as the Italians, and much more inclined to rob. The hybrids are a cross between any two strains, but "hybrids" generally refers to a cross between Italians and blacks. Hybrids vary considerably in their characteristics.

Unless the bees of a colony purchased show at least two yellow bands, the beginner will probably wish to requeen, for no matter what the strain, the entire colony may, by the simple substitution of an Italian queen for their present one, be changed in six to eight weeks into a fine Italian colony. To requeen, it is only necessary to find the old queen and kill her, and then introduce the new one according to the directions that accompany her, not opening the hive for four or five days after introducing.

Why Clip the Queen's Wings?

When for any reason a colony becomes dissatisfied with its home—usually because of insufficient ventilation or a crowded condition of the brood-chamber or supers—they start preparations for swarming. When

colonies swarm, two-thirds or three-fourths of the bees, together with the queen, leave for a new home. To prevent swarming, therefore, certain measures should be taken, among which is the clipping of the queen's wings. (Other preventive measures will be mentioned later.) Having the queen's wings clipped does not prevent the colony from swarming, but it does prevent their leaving for new quarters, because, at the time the swarm issues, the queen, finding herself unable to fly, finally crawls back into the hive, and the swarm, unwilling to leave without her, is compelled to return.

Finding the Queen.

During the warmest hours of a day when the bees are gathering nectar the queen may be found on one of the frames of brood—probably on one containing eggs. A very good queen may be found quite readily because of her unusual size, stately bearing, and her little retinue of attendant bees that form a circle facing toward her caressing her with their antennæ whenever she stands still for a moment.

Small and inferior black queens are usually quite excitable and much harder to find. To locate such a queen, sit with the back toward the sun and beginning at the furthest side of the brood-nest, and using very little smoke, carefully remove one comb after another until the frames of brood are reached. She will doubtless be on one of these. Therefore examine each of these very carefully. If she happens to be on the comb pulled out, she will often run to the furthest side of the comb, or she may run to the unexposed side of the adjacent comb, which is the side that first comes in view on removing the next frame. Therefore, glance at the exposed surface of the next comb before examining the one removed. After looking the frames all over twice if the queen is not found, the hive should be closed and the bees allowed to become quiet before another attempt is made. And if he still fails to find the queen, the beginner may be obliged to resort to the method given under the "Field of Experience" in this issue.

How to Clip.

When found, the queen should be carefully picked up by the wings or thorax, but on no account should she be held by the abdomen, as she is very easily injured by such handling. With the thumb and fore finger of the left hand hold the queen securely by the thorax, bringing the second finger under her so she may grasp it with her feet, thus keeping her feet out of the way when clipping; for unless care is taken a leg might be accidentally cut and the queen rendered useless. Holding a pair of sharp scissors as shown in the cut, and remembering that clipping a wing is probably no more painful than clipping hair, cut off about one-half or two-thirds of both wings on one or both sides. Cutting the wings of one side is sufficient to prevent her flying, but some prefer cutting on both sides, since it is a little easier to

find such a queen because of her changed appearance.

Other Work Preceding the Flow.

In case some colony becomes too crowded and starts queen-cells, they should be torn down and more room given. The better plan, however, is to give the super early enough so queen-cells will not be started. Those colonies that become crowded for room early in the season, while the nights are yet quite cool, should have a super of empty combs placed under the brood-chamber. This will enable the queen gradually to extend her brood-nest lower, and will leave the brood all in the warmest part of the hive where there will be no danger of chilling.

Two or three weeks before the opening of the main honey flow, when the nights are warmer, those colonies that become crowded for room may be given a super of combs or foundation immediately above the brood-chamber, and two frames of eggs and larvæ from the lower story placed in the upper one, replacing with empty combs or foundation. Or, if preferred, the order of these two stories may be reversed. It is to be hoped that combs may be used; for if foundation is used when no honey is coming in, it is necessary to feed syrup in order to get the foundation drawn out; and one always objects to feeding syrup too near a honey flow for fear of getting syrup stored with the honey. When some brood is thus kept in the second story the bees become so accustomed to occupying the second story that they store above readily when the flow actually starts. A week or so after the opening of the honey flow, the queen should be placed below and a queen-excluder inserted between the two colonies.

If directions are followed, swarming can probably be prevented this month; and as a general thing those colonies that do not swarm are the ones that store the most surplus. On the other hand, if one desires to increase he may insert a queen-excluder between the two stories, leaving the queen below and tear down all capped cells. Eight days later move the upper story (this time leaving the capped queen-cells in order that a new queen may be raised), and leave with contracted entrance so the brood will not chill. This subject will be discussed at greater length in our next issue.

Beginners' References.

See pages 291, 293, 296, 322, and last paragraphs of 312 and 306. "Daddy Lowe," is particularly helpful, and yet, if he had not been more interested in Anne than in the bees, he would have added certain other remarks. At the foot of page 291, he would have added, "Also having young larvæ below will cause part of the bees to stay below to care for it, and thus there will be no danger of the bees entirely deserting the lower story, and leaving the queen alone." Also later on he would have added, "Better have all the weight on the side next you, then tip the super toward you when lifting."

MY Dear Friends:

I am getting to be an "old man," and very likely I shall tell you of things of long ago that I have told, maybe, over and over again; but I think some of it may be new, or new to some of my hearers:

When I first became a member of the Medina Congregational Church, or perhaps a little before, I went out on the street, in front of my store, and invited neighbors and all to "come to church."

My next neighbor, a grocer, replied, "You mean, of course, come to *your* church?"

"No," replied I, "Come to *any* of our Medina churches. We are having excellent union meetings."

A bystander remarked, "Oh, Mr. Root, that is 'too thin.' We all know every man is working for his own church."

At this point the first speaker gave me a challenge. Said he: "Mr. Root, there are five churches in town. You get all five ministers to stand side by side in one pulpit, and I will come to church." A chorus from the crowd responded with "I" and "I" and "I." Then they laughed and "jeered" because they thought they had me "in a corner."

I wasn't to be balked, however, and I replied, "Good! I will do it, and I will start right off this minute to arrange for it."

Four of the five clergymen welcomed the invitation, but the fifth objected. He coldly replied that had I known anything of the rules of their denomination I would not have come on such an errand. I went out feeling that I had been somewhat "snubbed." Now, friends, comes one of my first experiences of quick answers to prayer. This parsonage was about half a mile out of town. On my way back I prayed out loud that my new-found Savior and Redeemer would take the matter in hand and do what I had failed to do. I confess that I was a little stirred up at my rebuke, but while I was talking I heard rapid, heavy footfalls on the wooden sidewalk behind me. A good brother came up and clapped his hand on my shoulder and said, "Mr. Root, our pastor has reconsidered his refusal and bids me catch you before you get back and say *he will come*, and will take such part in the meeting as you may wish."

It was noised around town and a great



"In all thy ways acknowledge Him and He shall direct thy paths."

crowd filled the church. I asked the five pastors to speak 10 minutes each. Of course they were glorious sermons or "sermonettes." May I venture to say that I have liked short sermons ever

since? And do I need to tell you that quite a revival followed? There may be some in this audience who came "out of darkness into light" at those very union meetings that followed.

At one church there was trouble about getting the janitor to have the church warmed and in order. I went to see him. He said the church refused to pay him extra for so many more meetings. They hired him by the year. Said I, "Mr. T., how much do you think you should have to make it fair and christianlike?"

The meetings went on and some of that church asked why the janitor had all at once become so pleasant and willing. He replied that I had paid him the extra. A good brother called for a collection to pay back what Mr. Root had paid *their* janitor. With the "revival on" they soon got enough and more too.

Among the converts was a young man just starting in the grocery business. He came to me, asking what I thought about his selling tobacco. He said he did not care so much about selling to grown men, but it hurt his conscience to sell to young boys. I suppose you know what A. I. Root would say. Well, he came to me later in great trouble. One good customer who had called for quite a lot of goods, when he found our young friend was not going to keep tobacco any more, went off, leaving his goods on the counter, to trade where they were not so fanatical. I asked the grocer to go with me and talk with our pastor. After a season of prayer the good minister put his hand on the young man's shoulder and said, "W., don't be worried, for as long as you are listening to the voice of conscience, as you have told us, *God will take care of you.*"*

During the 40 or more years that have passed, groceries, many of them, have been started in Medina, many of them *fine ones*, but none of them have stood the test of 40

*In the hymn book, Alexander's Gospel Songs, is a beautiful hymn that we often sing in our Presbyterian Sunday School entitled, "God Will Take Care of You." When we sing it I often think of the young grocer of years ago.

years except this one. It is still a fine store and doing a fine business.

"A LAND FLOWING WITH MILK AND HONEY,"
IN PLACE OF "BEER AND BREWERIES."

The clipping below, which I take from the *Sunday School Times*, tells us just how it is coming to pass.

WHY STEEL COMPANIES ANNEX DAIRIES.

The big steel companies, according to W. E. Skinner, General Manager of the National Dairy Show in Columbus this year, have found it practicable to go into the milk business to the extent of buying it wholesale and selling it to their workmen at cost. "Men soon go to pieces who drink liquor after working over hot fires," he explained to the newspaper reporters. "The fires start them on the decline and booze finishes it. But manufacturers have found that milk not only rebuilds tissue and overcome the harm that heat and flames have done, but it keeps the men away from the saloons and thus does double duty."

I have long been expecting something of the kind, and may the Lord be praised that it is already under way.

HONEY FROM THE PEANUT, AND SOMETHING MORE ABOUT MOORE HAVEN.

A. I. Root, Bradentown, Fla. *

Dear Friend:—I just ran across something here that I am sure will interest you. H. P. Merseran of this place furnished the honey, so he told me yesterday, which took the blue ribbon at the Kansas City exposition. The exhibit was made by Mr. Rollo in the name, I believe, of the South Florida Lands Co. and the honey was samples of comb and of extracted honey. Mr. Merseran has about 30 colonies here and says they are doing well. I will say that the honey they produce here is fine—quite similar to clover honey, as it comes mostly from the peanut blossoms. Moore Haven captured pretty nearly everything on vegetables and grains, including the grand sweepstakes prize, for best display of all varieties of farm crops.

Mr. Merseran tells me that while this is a fine honey-producing region it isn't a beekeeper's paradise, as there are many pests to contend with, not the least of which is the moth. This pest will occupy the combs many times even in a strong colony. But I guess we have to fight for what we get almost anywhere. We just have different things to contend with in different places. Your friend,

LEON C. WHEELER.

Moore Haven, Fla., Mar. 13, 1919.

SWEET CLOVER FOR BOTH CORN AND HONEY.

On page 373, June GLEANINGS, particulars are given of a wonderful crop of corn produced by turning under sweet clover. C. A. Neal of Jonesboro, Ind., who believes he has discovered an improvement on the plan, writes to me as follows, describing what he calls, "The New Neal System of Sweet Clover Farming."

"Here it is: Sow scarified sweet-clover seed in corn on July 1. Run thru the corn with a one-horse weeder, that has 14 small teeth about one inch wide, to cover seed. Next year don't touch it at all. Supposing the seed was sown July 1, 1919, then on the first of October, 1919, take a Mogul tractor with two plows and weed tuckers, and turn under the full growth, which goes 30 tons to the acre exclusive of roots. In the following spring put in

corn, and on the first of July sow sweet clover again. In this way the farmer gets a crop of corn every other year, and I get a crop of honey every other year. The humus and moisture supplied by the 'rotten' sweet clover will double the yield of corn, and the corn-belt becomes a beekeeper's paradise. "It's a poor rule that won't work both ways." Put your shoulder to the wheel, A. I. Root, and give the new Neal system of farming a life. A full untouched growth of sweet clover turned under and the field sown to wheat means at least 50 bushels to the acre. The same rate of increase holds for potatoes, oats, rye, sunflowers, and hay. Pastures produce ten times as much feed, and this feed will make healthy stock because of its tonic qualities. My statements are not an idle dream, but have been proved by actual test. The clovers now in use will not turn under right, as they choke the plow. Besides this, they do not rot when turned under, and so cause the ground to dry out and reduce the yield of corn. Any kind of rotten vegetable matter turned under holds water like a sponge all summer, no matter how dry it becomes. Let us christen sweet clover the 'magical lamp.' Rub that lamp, and the farmer will enter a new era of prosperity. To use your own words, 'May the Great Spirit above be thanked for this great gift to man.'"

C. A. NEAL, Bee Specialist.

Jonesboro, Ind.

BACK TO OUR MEDINA HOME.

Mrs. Root and I expect to be back in our Medina home about the last week in April. The following from *The Bradentown Herald* of April 9 may interest our readers:

THE WIND ELECTRIC AUTOMOBILE UP TO DATE.

Editor Herald:—All great inventions that have blessed the world in times past, it seems, have had to pass thru a sort of evolution, or series of experiments before coming into general use. The wind-propelled electric auto is no exception to this rule.

When the Wind Electric Corporation of Wyndmere, N. D., was consulted they replied they had never undertaken to make the wind replace a horse, but they were willing to try it. Again it was a question whether the belt they used would stand the hot wet summers of southern Florida. As a result the fabric belt used for lighting residences, gave out down here in about six months. At this stage I had consulted the Goodyear Rubber Co. of Akron, O., and they felt sure they could give a belt that would "stand up." Such a belt has now been running over six months, day and night, winter and summer, and is apparently unharmed. Again the Windmill folks supposed a heavy generator or dynamo would be required to run a car and sent one with the mill weighing about 400 pounds. Recent experiences induced them to believe one weighing less than half as much would give more "juice" for the car. Such a generator has just replaced the heavy one, and I am happy to state, I not only get more miles daily with the auto but it also lights our home very successfully. Therefore I can now say, "My steed requires no hay, oats, or corn, but feeds only on wind," and still more, he now converts said wind into light. Who knows but that wind may ultimately be the light of the world?

It may be well to add the electric auto has already during the past winter made close to 1,000 miles, and a good deal of the time it has carried quite a load of our new potatoes (over \$200 worth) to market. Of course the wind is lost when the machine is out on the road, but I am planning (if spared) to have extra batteries during the coming winter to store for the house lighting, when the machine is out on its trips.

A. I. ROOT.

Classified Advertisements

Notices will be inserted in these classified columns for 25 cents per line. Advertisements intended for this department cannot be less than two lines, and you must say you want your advertisement in the classified column or we will not be responsible for errors.

HONEY AND WAX FOR SALE

Beeswax bought and sold. Strohmeier & Arpe Co., 139 Franklin St., New York.

Buckwheat honey in 120-lb. cases, at 17c per pound. C. B. Howard, Geneva, N. Y.

FOR SALE.—Clover, amber and buckwheat honey in 60-lb. cans. C. J. Baldrige, Kendaia, N. Y.

FOR SALE.—Clover and buckwheat honey in 60-lb. tin cans. H. B. Gable, Romulus, N. Y.

FOR SALE.—Extra-good quality clover or white aster honey, packed in 60-lb. tins, two in a case. H. C. Lee, Brooksville, Ky.

FOR SALE.—Clover and buckwheat honey in any style containers (glass or tin). Let us quote you. The Deroy Taylor Co., Newark, N. Y.

FOR SALE.—Extra quality buckwheat extracted honey in 60-lb. cans. J. W. Hosie, East Aurora, N. Y.

FOR SALE.—Buckwheat honey in 60-lb. cans, 2 cases in each case; 14 cases. Make me an offer f. o. b. here. Robert Conn, Roaring Branch, Pa.

FOR SALE.—5 kegs of best N. Y. State buckwheat honey to the highest cash bidder. S. V., c o Gleanings in Bee Culture, Medina, O.

FOR SALE.—Michigan's Best extracted honey in packages to suit; white clover, raspberry, milkweed, buckwheat. A. G. Woodman Co., Grand Rapids, Mich.

FOR SALE.—40,000 lbs. of No. 1 extracted clover honey and 35,000 lbs. of aster honey, both of extra-light color, heavy body, and fine flavor, in 60-lb. cans. W. B. Wallin, Brooksville, Ky.

FOR SALE.—Clover, heartsease, No. 1 white comb, \$6.00 per case; fancy, \$6.50; extra fancy, \$7.00, 24 Danz. sections to case; extracted 120-lb. cases, 25c per pound. W. A. Latshaw Co., Carlisle, Ind.

HONEY AND WAX WANTED

Small lots of off-grade honey for baking purposes. C. W. Finch, 1451 Ogden Ave., Chicago, Ill.

WANTED.—Section honey. Correspondence solicited. J. E. Harris, Morristown, Tenn.

Beeswax wanted. Highest prices paid. State quantity and quality. E. S. Robinson, Mayville, N. Y.

WANTED.—Comb and extracted honey, also beeswax. Send samples. C. S. Fryer, 386 Halsey St., Portland, Ore.

BEEWAX WANTED.—For manufacture into SUPERIOR FOUNDATION. (Weed Process.) Superior Honey Co., Ogden, Utah.

WANTED.—Comb and extracted honey, car lots and less. Mail sample, quantity, and price. W. Morris, Yonkers, N. Y.

WANTED.—Extracted honey, all kinds and grades for export purposes. Any quantity. Please send samples and quotations. M. Betancourt, 59 Pearl St., New York City.

WANTED.—Extracted and comb honey. Carload or less quantities. Send particulars by mail and samples of extracted.

Hoffman & Hauck, Inc., Richmond Hill, N. Y.

WANTED.—Extracted honey in both light and amber grades. Kindly send sample, tell how honey is put up and quote lowest cash price delivered in Preston. M. V. Facey, Preston, Minn.

BEEWAX WANTED.—We are paying higher prices than usual for beeswax. Drop us a line and get our prices, either delivered at our station or your station as you choose. State how much you have and quality. Dadant & Sons, Hamilton, Illinois.

FOR SALE

HONEY LABELS.—Most attractive designs. Catalog free. Eastern Label Co., Clintonville, Conn.

FOR SALE.—A full line of Root's goods at Root's prices. A. L. Healy, Mayaguez, Porto Rico.

FOR SALE.—Good second-hand cans. 60c per case. C. S. Watts, Monticello, Ills.

FOR SALE.—25 Alexander feeders at 25c each. E. G. Carr, New Egypt, N. J.

FOR SALE.—30 8-frame supers, full foundation, \$1.60 each. No disease. H. D. Hopkins, Otterville, Mo.

FOR SALE.—Novice extractor. Did not extract 100 lbs., \$16.00. A. H. Hattendorf, Ocheyedan, Iowa.

FOR SALE.—Two-frame Novice extractor, never used. Bargain. Graves & Hemmes, Great Barrington, Mass.

SEND TODAY for samples of latest Honey Labels. Liberty Pub. Co., Sta. D, Box 4E, Cleveland, Ohio.

BEEKEEPERS OF THE NORTHWEST! Order ROOT Supplies from George F. Webster, Sioux Falls, South Dakota.

FOR SALE.—SUPERIOR FOUNDATION, "Best by Test." Let us prove it. Order now. Superior Honey Co., Ogden, Utah.

FOR SALE.—One Cone extractor No. 15, with brake; four 2,000-lb. tanks, all as good as new. Enquirers address at at New Paris, Ohio. V. H. Kirkpatrick.

SPECIAL SALE.—One-story 8-frame dovetailed hives, in flat, with telescope $\frac{3}{4}$ wood covers, in packages of five at \$10.00 per package. A. G. Woodman Co., Grand Rapids, Mich.

FOR SALE.—200 10-frame empty hive bodies. Barnes saw, two 1,200-lb. tanks, one 2-frame and one 4-frame extractor for deep combs. Prices right. F. W. Lesser, East Syracuse, N. Y.

FOR SALE.—15 double-wall Root chaff hives, 240 Hoffman frames, wired, with combs complete. All in good condition. Will sell at bargain prices. Brookfield Poultry Farm, Versailles, O.

FOR SALE.—100 8-frame metal covers with inner covers, 75c each; 12 10-frame, the same, 90c each. All in good repair. Richard D. Barclay, Riverton, N. J.

FOR SALE.—Good second-hand empty comb-honey double-deck shipping cases for $\frac{3}{4}$ x 1 $\frac{1}{4}$ sections, good condition, at 25c each, f. o. b. Cincinnati. C. H. W. Weber & Co., 2146 Central Ave., Cincinnati, O.

CANADIAN BEE SUPPLY & HONEY CO., Ltd.—73 Jarvis St., Toronto, Ont. (Note new address.) We have made-in-Canada goods; also can supply Root's goods on order. Extractors and engines: GLEANINGS and all kinds of bee literature. Get the best. Catalog free.

FOR SALE.—Full colonies in new standard eight-frame hives, each with tested Italian queen, full sheet wired combs, hustlers, easy to handle; no disease here. J. Ford Sempers, Aikin, Md.

Golden Italian queens that produce golden bees; the highest kind, gentle, and as good honey gatherers as can be found; May and June, untested, each, \$2.00; six, \$7.50; doz., \$14.00; tested, \$4.00; breeders, \$5.00 to \$20.00. J. B. Brockwell, Barnetts, Va.

PHELPS' GOLDEN ITALIAN QUEENS combine the qualities you want. They are **GREAT HONEY-GATHERERS, BEAUTIFUL and GENTLE.** Virgins, 1.00; mated, \$2.00.

C. W. Phelps & Son, Binghamton, N. Y.

FOR SALE.—5 box hives hybrid bees in May, \$5.00 each. Four-frame nuclei Italian bees, \$5.00 each. Mann Green Bone Cutter, hand and power, good as new, \$15.00. Present catalog price, \$25.00. B. F. Averill, Howardsville, Va.

MOTT'S NORTHERN-BRED Italian Queens are hardy, prolific, gentle, and hustlers, therefore resist disease well. Untested, \$1.00 each; \$10.00 for 12; selected tested, \$2.00 each. Virgins, 50c each. Plans "How to Introduce Queens" and "Increase," 25c. Also Golden Campine eggs, best of laying birds. E. E. Mott, Glenwood, Mich.

FOR SALE.—25 colonies Italian bees in new 10-frame L. hives, Danzenbaker reversible bottoms, and metal-covered tops. Frames wired with full sheets of foundation. All strong colonies. 15 colonies, \$200; one or more, \$10.00 each. Also supers and drawn combs. Emil Tappert, 919 N. Main St., Jacksonville, Ills.

FOR SALE.—North Carolina-bred Italian queens of Dr. C. C. Miller's strain of three-band Italian bees. Gentle and good honey-gatherers. May 1st until July 1st, untested, \$1.25 each, \$12.00 per doz.; tested, \$1.75 each, \$18.00 per doz.; select tested, \$2.25 each. Safe arrival and satisfaction guaranteed. L. Parker, Benson, R. D. No. 2, N. C.

HOLLOPETER'S Italian queens ready in June, untested, one \$1.75; six, \$9.00; July, one, \$1.50; dozen, \$15.00. Quantity price on application, delivery after July 10. These prices guarantee you safe arrival of really high-grade Italian stock, more efficient service and wings clipped when desired. J. B. Holloper, Rockton, Pa.

FOR SALE.—Quirin's hardy northern-bred Italians will please you. All our yards are wintered on summer stands; more than 25 years a commercial queen-breeder. Tested and breeding queens ready almost any time weather permits mailing. Untested ready about June 1. Orders booked now. Testimonials and price for asking. H. G. Quirin, Bellevue, Ohio.

Queens from one of Dr. Miller's breeders. Tested, \$1.75 each; \$18.00 per doz.; untested, \$1.25 each; \$13.00 per doz. 1-frame nucleus, \$3.00 each; 2-frame, \$5.00 each; 3-frame, \$6.50 each, without queens. We have never had any disease here. Safe arrival and satisfaction guaranteed. We have no package bees to offer and no untested queen except with nuclei. Delivery April 15. Geo. A. Hummer & Sons, Prairie Point, Miss.

BEES FOR SALE.—Bees in one-story standard hives, \$10.00 each up. Average grade bees in various parts of Pennsylvania for shipment direct to purchaser. There is no guarantee either expressed or implied as to the purity of these bees, or their condition, but they are guaranteed by the former owner to be free from foul brood. Engage them now. John N. Prothero, DuBois, Pa.

HELP WANTED

WANTED.—Good experienced man; also some good helpers. Good chance for willing workers. Penn Co., Penn, Miss.

HELP WANTED.—One or more men to work with bees the coming season. State, age, experience, and wages, we to furnish board. The Rocky Mountain Bee Company, Billings, Mont.

WANTED.—Experienced beeman and one helper. Fast workers and able to do heavy work. Prefer young men experienced in handling auto trucks. State all particulars in answering and wages wanted. Ernest W. Fox, Fruitdale, S. D.

WANTED.—One experienced man, and students as helpers in our large bee business. Good chance to learn. Modern equipment and outfit, including auto truck, located near summer resorts. Write, giving age, height, weight, experience, reference, and wages wanted. W. A. Latshaw Co., Clarion, Mich.

SITUATIONS WANTED

WANTED.—Experienced beekeeper wants employment in an apiary in U. S. or Canada. Send letter, no telegram. Morris F. Laughlin, Albin, Wyo.

WANTED.—Young man landing in San Francisco about the middle of April, with fair experience, wants work on bee farm to gain experience in American methods. Character and habits O. K. Write. Asken, c o Thos. Cook & Son, San Francisco, Cal.

MISCELLANEOUS.

Highest prices paid for old used postage and revenue stamps. A. Arnold, 1482 Broadway, New York.

FOR SALE.—Early tomato plants, 100 by mail, 40c. J. F. Michael, Winchester, Ind.

Get my free book on Belgian Hares and big New Zealand Red Rabbits. J. E. Johnson, Marionville, Mo.

PRINTING.—Send your copy for estimate. Work guaranteed. Circulars, Bill Heads, Letter Heads, etc. The Hawthorne Press, R. W. Hopkins, Mgr., Yonkers, N. Y.

Complete typewritten (mimeographed) report of lectures by Dr. Phillips and Mr. Demuth of U. S. Dept. of Agriculture at California Short Courses and Cornell Univ., questions, answers, etc. Beekeeping principles practically applied to Eastern and California conditions. 55,000 words of **STRAIGHT TALKS** on bees and beekeeping, nearly equal to 200-page book. See February Gleanings, \$1.75. R. B. Calkins, 5800 Hearn St., Oakland, Cal.

E. D. Townsend, the present owner of the *Domestic Beekeeper* bought beekeepers' supplies for the National Beekeepers' Association for several years. He is now buying for the subscribers of the *Domestic Beekeeper* at the same low manufacturers' price. Listen now what he has got up his sleeve: Any **GLEANINGS** subscriber buying five dollars' worth of supplies thru the *Domestic Beekeeper*, at catalog price, and sending along an extra dollar to pay for a year's subscription to the *Domestic Beekeeper*, will get in return a rebate check for a dollar, leaving the year's subscription to the *Domestic Beekeeper* absolutely free to you. Of course, if your order for supplies is larger than five dollars, you will get a correspondingly larger rebate check on your order. One of our subscribers got a rebate check of \$40.00 on his order of supplies last month, March. It was just like getting money from home to him, as he sent us the same money he would have had to pay if he had bought thru the regular dealer in beekeepers' supplies. More and more, close buyers of beekeepers' supplies are investigating the buying facilities of the *Domestic Beekeeper*. A word to the wise should be sufficient to cause you to send your next order for beekeepers' supplies to the Domestic Beekeeper, Northstar, Michigan.



LAST CHANCE

ALL FOR 2 DIMES--To Introduce I will send Selected Seed for 10 Big Hills Genuine Early Six Weeks Potatoes, earliest, hardiest, best keepers on earth—delicious quality; so early you can grow two full crops a year even in the north (I send full directions); amazingly productive.

Growers Report

"650 bushels per acre."
"A full bushel from every six hills." "52 big potatoes in one hill." "12 bushels from a dollar order." Etc., etc.

Also 20 Hills New Profitic Tree Beans—enormous and sure yielders



everywhere of extra early, pure white luscious beans; 10 varieties best Butter and Head Lettuce—1700 seeds; 30 Hills red, blue, white, rice and gold Pop corn—for children and chickens; 10 beautiful fragrant Tree Ferns, and big 25c. Flower Collection—for wife and children. ALL safely boxed and postpaid for **TWO DIMES** or 24c. in stamps. All seeds and 30 Hills Potatoes 50c. Seeds and 70 Hills \$1.00. Seeds and 250 Hills Potatoes \$3.00.



I Give 50 Beautiful Watches Free to 50 customers growing most Potatoes from 100 hills.

A. G. Cook, Potato Specialist
Hyde Park on Hudson, N. Y.

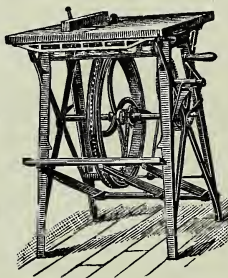
BARNES' Hand and Foot Power Machinery

This cut represents our combined circular saw, which is made for beekeepers' use in the construction of their hives, sections, etc.

Machines on Trial

Send for illustrated catalog and prices

W. F. & JOHN BARNES CO
646 Ruby St
ROCKFORD, ILLINOIS



IRON AGE

Farm, Garden and Orchard Tools
Answer the farmers' big questions, How can I grow crops with less expense? How can I save in planting potatoes? How make high priced seed go farthest? The

IRON AGE Potato Planter

solves the labor problem and makes the best use of high priced seed. Means \$5 to \$50 extra profit per acre. Every seed piece in its place and only one. Saves 1 to 2 bushels seed per acre. Uniform depth; even spacing. We make a full line of potato machinery. Send for booklet today.

No Misses
No Doubles

Bateman Mfg Co., Box 20B, Grenloch, N. J.



Our Food Page—Continued from page 304.

ey and the seasonings and cook until smooth. Pour the sauce over the beets, which have been cut in dice and heat thru. —Adapted from recipe by Fannie Merritt Farmer.

BUTTERSCOTCH PIE.

½ cup water	¼ teaspoon salt
4 tablespoons flour	2 tablespoons pulverized sugar
3 tablespoons butter	1 teaspoon vanilla
1 cup milk	1 baked crust
2 eggs.	

Put the brown sugar and water over the fire until the sugar is dissolved, add to the milk, thicken with the flour and butter rubbed together, and then add the beaten egg yolks, the salt and cook until smooth. Pour into the crust, cover with a meringue made of the egg whites well beaten and combined with the pulverized sugar and put into the oven until lightly browned.

FRUIT DUMPLINGS.

3 cups canned fruit	milk
1 cup flour	½ teaspoon salt
2 teaspoons baking powder	1 tablespoon butter honey

Put the fruit on to heat in a rather wide stew pan which has a close-fitting cover. Sift the baking powder and salt in the flour, add enough milk to make a stiff drop batter and drop from a teaspoon over the boiling hot fruit, cover and cook about 12 minutes. Serve the dumplings with the fruit for a sauce, having first added the butter to the fruit and sweetened it to taste with honey.

This is a good emergency dessert as it may be prepared in a very few minutes from materials at hand in nearly every pantry.

STEAMED DATE PUDDING.

3 tablespoons melted butter substitute	¾ teaspoon soda
½ cup honey	1 teaspoon cinnamon
½ cup thick sour milk	½ teaspoon cloves
about 1 ¼ cups flour	½ teaspoon salt
	1 cup chopped dates or figs.

Combine the melted butter substitute and the honey. Sift the flour and the other dry ingredients together, and add the sour milk and the flour a little at a time, alternately, until all has been used. The batter should be as stiff as cake batter. Stir in the fruit, steam two hours, and serve with pineapple hard sauce.

PINEAPPLE HARD SAUCE FOR STEAMED PUDDING.

1 cup pulverized sugar	2 or 3 tablespoons pineapple juice drained from canned pineapple.
1/3 cup butter or butter substitute	

Cream the butter or substitute and the pulverized sugar thoroughly together and gradually beat in the pineapple juice a few drops at a time. Put in a cool place to become firm.

We Are
General Agents in Michigan
for The A. I. Root Company

This Means That

- From us you get bee supplies of the highest quality.
- Our prices are identical with theirs.
- You get immediate shipping service from the center of Michigan.
- We pay you Root prices for Beeswax at Lansing.
- The Root aim is our aim, that of serving the interests of Michigan beekeepers in the best possible manner.
- We want to send you a copy of our 1919 catalog. A copy of the "Suburban Beekeeper's Outfit" for the asking.

M. H. HUNT & SON

510 NORTH CEDAR ST.
LANSING, MICH.

Administrator's Sale

W. D. Soper's entire stock of bee supplies.
All hives 20 per cent off list.
All No. 2 sections 15 per cent off.
Write for list.

H. L. Soper, Admr, Rt. 4, Jackson, Mich.

NEW ENGLAND

BEEKEEPERS will find a complete stock of up-to-date supplies here. Remember we are in the shipping center of New England. If you do not have a 1919 catalog send for one at once.

H. H. Jepson, 182 Friend St., Boston, Mass.

BE CAREFUL

In selecting your Foundation stock of any Breed

Rufus Red Belgian Hares

Only Pedigreed Registered Stock. Prices Reasonable

JOSEPH BLANK

428 Highland Ave.

Mount Vernon, New York

WRITE GALLOWAY

TODAY OF WATERLOO
For new 1919 Book. Save \$25 to \$200 on Gasoline Engines, Manure Spreaders, Cream Separators and other implements. Sold direct from factory. Our 300,000 satisfied customers prove the merit of goods and direct selling system. Close buying points. Mention implement interested in. Write today.
Wm. Galloway Co., Box 767 Waterloo, Iowa



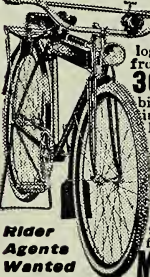
"Best" Hand Lantern



A powerful portable lamp, giving a 300 candle power pure white light. Just what the farmer, dairyman, stockman, etc. needs. Safe—Reliable—Economical—Absolutely Rain, Storm and Bug proof. Burns either gasoline or kerosene. Light in weight. Agents wanted. Big Profits. Write for Catalog. **THE BEST LIGHT CO.**

306 E. 5th St., Canton, O.

Delivered To you FREE



Your choice of 44 styles, colors and sizes in the famous line of "RANGER" bicycles, shown in full color in the big new Free Catalog. We pay all the freight charges from Chicago to your town.

30 Days Free Trial allowed on the bicycle you select, actual riding test in your own town for a full month. Do not buy until you get our great new trial offer and low Factory-Direct-To-Rider terms and prices.

TIRES LAMPS, HORNS, pedals, single wheels and repair parts for all makes of bicycles at half usual prices. No one else can offer such values and such terms.

SEND NO MONEY but write today for the big new Catalog. It's free!
MEAD CYCLE COMPANY
Dept. C153, Chicago

Rider Agents Wanted

AROUND THE OFFICE

M-A-O.

Will Logge up in Wisconsin is being persecuted the meanest by Gleanings as I see it. At least, he's been shut off of publicity. The other day he sent in a advertisement as follows to wit: "Wanted—a young lady or widow partner not over 36 years who has been, or is, interested in beekeeping, with some means, to produce honey on an extensive scale. Object matrimony." Gleanings wouldn't print it for Will Logge saying as how they wanted Will to understand they wanted no matrimony bureau, and also doubtin as to whether his object wanted more for the some means than for producin honey or tyin hisself up into matrimony notes. He says address him at 2029 Brown Street, Milwaukee. But afore any innocent girl not over 36 years old or any trustin and lonely widow under same age limits does address him I've got somethin to say to both of em, and also to him afore he gets his foot in so far in answerin he cant pull it out no way as how perhaps he'll want to the almightyest. This matrimony business is a serious thing approachin it either from the female or male side. It aint no joke by a long sight so it aint. Now lets see about Logge's proposishun. Why's he drawin the line at 36 anyway, on both widows and young girls not over 36? Is it fair to a girl as what is from 37 to 41 or 42? Nothin but young chickens for Will Logge I guess, and it would make me suspicious of him if I hadn't had more than 36 years experience. Onct again, girls and widows under 36 years old, take notice how he sort a drags his bait along the bottom and right at the end and sharpest and dangerous part of the hook he put on object matrimony. He even put this after mentionin a little detail about some means being required. That was a point to be noticed some too. I don't know how a hook baited up that way will get 36-year-old-and-under girls and widows playin round it, but I know I couldn't get no legal size bass of compis mentus on no such baited hook as that is. But after these passin observashuns of mine, if any widow or girl not over 36 years of standard length, still young, who is interested in beekeepin past or present, with some coin, wantin to produce honey and honeymoon and willin to have Logge have matrimony as a object too, wants to address him at Milwaukee, jest crack ahead. I aint got no further responsibility in the matter whatsoever so I haint. I feel I've put the case up to the girls and widows fair and I aint shut Will Logge entirely out of Gleanings columns contrary to all principles of a free press and inalienable rights guaranteed by the constitution. Oh, I was agoin to say somethin to Will too. I want to be fair, and I know somethin about matrimony I could tell him. There's a awful lot about matrimony that could be said and said over several times and then said some more too. I don't want Will as a fel-

ler male to get the worst end of any matrimony he may contract onto hisself, so I am tellin him now in advance he may get to correspondin so much with some of those 36-year-old little innocents that they wont let him go short of about ten thousand dollars, so they wont. There is worse things to be holdin tight holt on than a red-hot kitchen range, Will, and a No. 1 bear trap don't hold no faster onto a yearlin cub than a 36-year-old female of our species sometimes holds onto a object of matrimony. Before you get to frolickin too much with 36-year-olds out on the matrimony promenade, Will, I wanted to slip you the aforesaid informashun. Now, then, just as I said to the girls and widows above, after considerin all I have said to you, crack ahead if you want to. I don't feel no further responsibility. Praps I had orter say too, Will, if you love fishin and aint strong on gardenin and are given to yieldin to temptashun, there aint no worse thing on earth than matrimony to get into. For you mix matrimony and fishin and beekkeepin and gardenin and lawn mowin and a increasin family and some poverty and combine with these leadin factors in a continuoosly stirrin life a disposishun to yield to temptation on nice days when fish'll bite, and you'll find you'll get to tryin to lie out of it to your wife and then your self-respectin manhood will get to oozin out of you and you will get to crabbin and you never'll be happy again atall only jest the little time you can sneak off to the creek alone and that ends allays at sundown—and then you gotta go home and face it again. I tell you, Will, if you love fishin forever shun matrimony as a object. Don't ever again, if you are a true fisherman, think of advertisin it as a object at least. It aint no object whatsoever to a fisherman, so it aint. But now havin said so much, and havin let you into my department when they shut you out of classified ads, I say again, crack ahead if you want to. I feel I done my duty.

* * *

E. E. Mott of Glenwood, Mich., wrote to a beekeeper friend as follers: "The real bee men are nice fellows," and he goes on to say as how some stranger at a beekeepers' convention at Grand Rapids, Mich., stepped up to him and said beekeepers' conventions was the only ones where he never saw discord come up—nothin more than keen interest. Oh! bi sulphide, where's Mott been to a beekeepers' convention anyhow? Has he ever attended one in Wisconsin or the Western New Yorkers' association? If he aint he better not. When they all get to talkin at oncet includin the deliberative presidin officer it may not jest be discord exactly but it's a time when everybody present is keen interested of course and knows he or she is exactly right and nobody else is and he or she is sayin so emphatic. If the same sort o thing happened at my house I wouldnt probably say it was discord

(Continued on page 340.)

WANTED

Collectors of Flowers

The undersigned desires the services of collectors of the flowers of honey plants in the Southern and Western States, either boys, girls, men or women. The desire is to obtain fresh flowers from the above States to be photographed natural size. They should be packed and shipped as follows:

Select flowers which have recently opened or are still in bud. Wrap the ends of the stems in damp cotton or moss and tie firmly in place. Pack in wooden boxes, lined with waxed paper (pasteboard boxes will break). Fill in the empty space with cotton or other soft material to prevent the flowers shaking about and being spoiled. Wrap the box in paper and mail by parcel post, insured.

I will pay postage, cost of packing material and also a fair price for collecting. Write at once for further particulars. The flowers of any rare honey plant especially desired.

Mail no flowers without writing me first.

John H. Lovell, Waldoboro, Me.

I Have about 300 Two and Three Pound Packages of Bees for Sale with Untested Italian Queens

I ship bees on one comb of brood and honey. My eight years' experience has proved to me that this is the most satisfactory way of shipping live bees.

Two-pound package with queen.....\$5.00
Three-pound package with queen..... 6.00

The above is for May delivery.
Queens, per doz., \$10.00; per 100 or more, \$85.00. The above are three-banded stock only. For Canadian orders add \$1.00 per package. Absolutely free from disease. Safe delivery and satisfaction guaranteed.

OSCAR MAYEUX. Bx. 15, Hamburg, La.

BEES We furnish full colonies of Italian bees in double-walled hives, single-walled hives, and shipping boxes; 3-frame nucleus colonies, and bees by the pound. Tested Italian queen, \$2.00; untested, \$1.50.

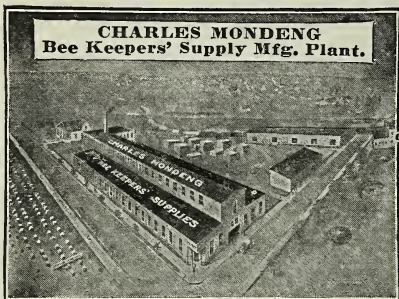
I. J. STRINGHAM, GLEN COVE, N. Y.

Distributors Root's Goods FOR PENNSYLVANIA

Send for new special catalog featuring the "Simplex" Super, and giving instructions to beginners

Prothero, Bailey & Goodwin DUBOIS PA.

\$30.000 WORTH OF Bee Supplies



All boxed ready to ship at once; 275,000 Hoffman frames, also Jumbo and Shallow frames, of all kinds, 100 and 200 in a box. Big stock of Sections, and fine polished Dovetailed Hives and Supers. I can give you big bargains. Send for a new price list. I can save you money.

Will Take Beeswax in Trade at Highest Market Price.

Charles Mondeng

146 Newton Ave., N. Minneapolis, Minn.

BEE-SUPPLIES FALCON LINE

We carry the largest supply in our section. Send us your inquiries.

Lowest Prices, Quality Considered

C. C. Clemons Bee Supply Co.
128 Grand Ave. KANSAS CITY, MO.

Established 1885



It will pay you to get our catalog and order early.

Beekeepers' Supplies

The Kind You Want and The Kind That Bees Need.

The A. I. Root Co.'s brand. A good assortment of supplies for prompt shipment kept in stock. Let us hear from you; full information given to all inquiries. Beeswax wanted for supplies or cash.

John Nebel & Son Supply Co.
High Hill, Montgomery Co., Mo.

REWARD

GOOD TILL MAY 20TH



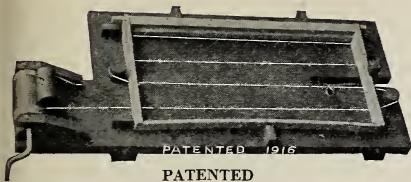
**THE KRETCHMER
MAN'FACTUR'G CO.**

Department G
COUNCIL BLUFFS, IOWA

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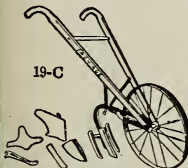
GARDEN TOOLS

Answer the "war gardener's" big question: How can I produce the most food in spare moments? How meet increased costs and war taxes?

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Easy to push, fast, thorough, low in cost. Opens and covers furrow for seed and fertilizer. Cultivates wide or narrow rows. Turns soil and covers scratch foods in poultry yards. 30 other Iron Age Combinations. Send for free booklet today, and learn how to garden the modern, easy way.

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17,000 Leader Churns, in use all over the country, have removed the dread of churning day by saving time and labor. They make more and better butter; 5000 unsolicited testimonials. A. N. Hollis, Lawrenceburg, Tenn. says: "Churning was a burden until we got the Leader. Now the children c y to churn. We can churn in 3 or 4 minutes." Special dash-steel frame—light weight—easily cleaned.

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Sold under two plans. Simply order a trial churn now, without sending any money; then, when satisfied at end of thirty days, remit the price shown below, or take orders from your friends and let your commissions pay for your churn, thus securing your Leader Churn Free.

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Send No Money Order direct from this Ad, checking size of Churn wanted. You pay express charge only. Nursery agents or farmer agents take trial orders. We deliver and collect; no money needed.

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IF GOODS ARE WANTED QUICKLY SEND TO ST. LOUIS

Indications just now are very favorable for a good season; but we are, of course, at the mercy of weather conditions. A good season means an excessive demand for the line which we handle, and we mention this, urging our friends to place their orders before the goods are really needed, that none may be disappointed.

WE CARRY ROOT'S GOODS

and sell at their prices; and considering this as a shipping-point, we can save you time and freight by having your orders come to this house. If you are new to the business we should like to explain that Root's goods are the very best that can be produced. If you have been using THE ROOT LINE you will recognize the truthfulness of the above and will want more of the same goods. Promptness in filling orders is the motto here. We also give small orders the same careful attention that is given to large orders. Let us have the pleasure of mailing you our free catalog.

BLANKE SUPPLY & MFG. COMPANY
 ST. LOUIS, MO.

Around the Office—Continued from p. 337.

for I couldn't get a word in edge wise but I would keep thinkin it sounded somethin like discord and come over to the office here to oncet to get away from it. But probably it aint the same in a beekeepers' convention. It is jest keen interest there. It's the same thing as when Mel Pritchard and Iony Fowls and Ernie Root get keen interested in some beekeepin topic in Gleanings office. It stops work out in the business office for people as has to work with figgers like to be able to hear themselves think at times. But I guess Mott and his friend are right about it praps, and there is only high tenshun accord and keen interest in a beekeepers' convention. Anyhow, when I hear the old cat a screamin and meawin and a spittin and a howlin and a whoopin it up Willyum Riley over at my house next time just cause the old coon dog has got holt of her dorsal porshuns and is chewin considerable there, I aint goin to worry about its bein discord so I aint. It aint discord atall. Its only a case where they are both interested the almightyest in contemporanus events, and I am jest goin to think of the interest at beekeepers' conventions and go on diggin angle worms and try to get down to the creek afore somebody with considerable infloocene at my place appears at the backdoor and says the lawn needs mowin again when you've got the potatoes hoed.

* * *

H. B. Bartlett-Miller of Kihikihi, Wai-kato, N. Z., writes me he's a big beekeeper and New Zealand has the best trout fishin in the world as trout average about 8 lbs. in season. That aint kind, Mr. Miller, specially if you aint drawin a long bow on N. Z. trout sizes. Its gettin nice bass weather here now and my garden aint planted and I dont need to be reminded anything about fishin for my peace of mind. You neednt send any more fishin news so you neednt unless you see that it gets here about mid-winter or sometime when my lovin wife is absent from home or when my garden is all made and hoed fine. I have enough temptashun in Rocky Creek right near home to rassle with this time of year allays without havin 8-lb. trout in New Zealand thrown up to me. Bi sulphide tho I wish I was helpin Mr. Miller in his apiary this comin trout season.

* * *

As the squash bug season is a loomin on the garden horizen again I guess I better let Robt. Elwell of Rumford, R. I., into my dept. to say the follerin: "Tell Steve T. Byington that Massachusetts isn't free of bugs, yet I alternately dusted with wood ashes and sprayed with pyrox all last summer and still had squash bugs left. They were thicker than hair on a dog (haven't counted fleas)." Let me tell you, Mr. Elwell, you aint got nothin in the way of pisen or other destroyin substances that you can

pile onto a squash bug that wont make him grow prosperous and feel better. I've got down to "Uncle Amos's" system of hand pickin em. It works tho it does bring on baekache and language.

* * *

That man L. L. Andrews out at Corona, Calif., one of the biggest beekeepers anywhere, is attractin my affeshun for he seems to be a feller traveler to the grave as what has human feelins and has a heart. He writes me to the follerin effect: "Why is it that when a fellow just gets so much NEC-ESSARY bee work that he don't know

TRADE NOTES

CHANGE OF LOCATION OF THE A. I. ROOT CO.'S
BRANCH OFFICE AT CHICAGO.

The Chicago branch of The A. I. Root Co., on May 1, will be removed from its present location at 215 W. Ohio St., to the 7th floor of the new Bauer Building at 224-230 W. Huron St., 4 blocks north of present location. This new location can be reached over the same surface lines or by way of the Northwestern Elevated, getting off at Chicago Ave. Station and walking 2 blocks south.

I. F. Miller's Strain Italian Queen

BEES FOR SALE. Now booking orders for prompt delivery. By return mail after June 15th or your money back. Northern bred, for business, from my best SUPERIOR BREEDERS gentle, roll honey in, hardy, winter well, not inclined to swarm feather-colored or three-banded. Queens a specialty; twenty five years breeding experience. Safe arrival and satisfaction guaranteed. Untested, \$1.00; 6, \$5.50; 12, \$10.00. Selected, \$1.25; 6, \$6.75; 12, \$12.00.

I. F. MILLER, Rt 2, Brookville, Pennsylvania

Complete Line of

Beekeepers' Supplies

Catalog on Request

F. Coombs & Sons, Brattleboro, Vt.

GOLDEN QUEENS.....

After April 1: Untested, \$1.25 each, 6 for \$7.00 or \$13.00 per dozen, or 50 for \$48; also 3-banded, untested at same price; tested, \$3.00 each and my very best at \$5.00 each. Satisfaction

R. O. Cox, Rt. 4, Greenville, Alabama



The "BEST" LIGHT

Positively the cheapest and strongest light on earth. Used in every country on the globe. Makes and burns its own gas. Casts no shadows. Clean and odorless. Absolutely safe. Over 200 styles, 100 to 2000 Candle Power. Fully Guaranteed. Write for catalog. AGENTS WANTED EVERYWHERE.

THE BEST LIGHT CO.

306 E. 5th St., Canton, O.

which way to turn, the weather is just ideal and his longings are just riveted on that trout stream where those big fellows are just biting 'scandalous'? Seems nothing but a few days 'neath cooling shade beside rushing water' will again put him in normal condition to properly care for the bees." The only difference between me and Andrews as beekeepers is that he keeps his longins riveted on the creek while I unrivet em and get down onto the creek myself, bees or no bees, swarms or no swarms. I get more fish that way than by keepin my longins tight riveted. I aint much for keepin fishin longins riveted.

* * *

Thanks to whoever that feller was down in Greenwich, Conn., who sent me all them tracts on "Hell." They're jest what I need at this fishin and gardenin time of year. The more I get scared into doin as what I order do in May and June the better for me. Its a tryin time to a fisherman-beekeeper and a time when his new years resolutions has generally got pretty wobbly. Some regeneratin beekeeper down near Northampton in Mass. might send me a few of Preacher Jonathan Edwards' pulpit picthers of the hereafter as what you dont want. They say there aint no better for morally bracin totterin human natur. If anybody else has any literatoor about the present or more especially the hereafter as will keep a fisherman beekeeper tendin his bees in May and June when he order, send it on. It'll be better for my garden too.

* * *

I sometimes get a opportunity to snoop around in Gleanings waste basket when Wilyum brings it out of the editorial den to lump it in the big waste paper catchall. These investigations of mine has led me to believe they don't print all what is sent em. For instance, Edw. McCoy up at Riverdale, Mich., wrote em somethin as they didn't seem to value sufficient to print. Here is jest exactly what it was: "My time for Gleanings has expired this month, so I will say stop it. They have been trying to make it better and spoiled it to my notion. Been

nothing much but wintering and feeding all the fall in it. I don't have to feed and have wintered for a long while, so don't have to read about it every month, and the writers have chewed the rag so long they ought to be handed a fresh one so as to have something fresh to chew on. Stop it now." I pulled that jule of feelin frankness out of the waste basket, so I did, and give it to the waitin public. It order do the editors some good. I hope McCoy will write some more. But I bet the Gleanings waste basket will be used more careful in the future.

Classified Advertisements Received Late.

FOR SALE.—Three-banded leather-colored Italians, of the celebrated Moore strain with tested queens, reared last season, in eight-frame Langstroth hives, at \$12.00 a colony.

John Hutchinson, Lake City, R. D. No. 2, Mich.

One of the best queen breeders in the United States is now raising queens for us from selected leather-colored Italians. We offer warranted queens at \$1 each or \$90 per hundred. Tested queens, \$2 each. Satisfaction and safe delivery guaranteed. Queens ready May 25. Order now as our supply is limited.

The Foster Honey & Mercantile Co., Boulder, Colo.

FOR SALE.—3000 cases, practically new 5-gallon cans, used once, at 50c a case.

Walter C. Morris, 105 Hudson St., New York.

FOR SALE.—150 section cases nailed up with glass front holding 20 4x5 sections each, at 20c each; 40 ten-frame Dovetailed full-depth bodies with full drawn combs built on full sheets foundation, wired Hoffman frames at \$2.00 each.

Hyde Bee Co., Floresville, Tex.

FOR SALE.—Leather-colored untested Italian queens, June and July, \$1.00 each, 6 for \$5.00.

J. M. Cutts, Montgomery, R. D. No. 1, Ala.

MASON BEE SUPPLY COMPANY MECHANIC FALLS, MAINE

From 1897 to 1918 the Northeastern
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**Prompt and
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BECAUSE—Only Root's Goods are sold.
It is a business with us—not a side line.
Eight mails daily.
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If you have not received 1919 catalog, send name at once.

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IRON AGE

GARDEN TOOLS

Answer the farmer's big questions:
How can I have a good garden with least expense? How can the wife have plenty of fresh vegetables for the home table with least labor?

This Hill or Drill Seeder and Wheel Hoe Combined

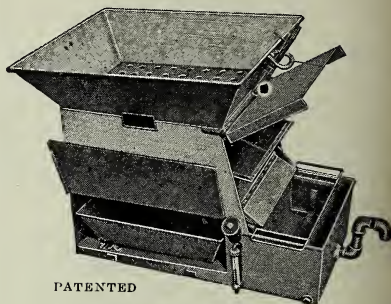
solves the garden labor problem. Takes the place of many tools—stored in small space. Sows, covers, cultivates, weeds, ridges, etc., better than old-time tools. A woman, boy or girl can push it and do a day's hand-work in 60 minutes. Many combinations and prices. Write for free booklet today.

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with prospects the best they have been in a long time? (Bees are strong and clover is making rapid progress.)

Also in concluding your plans have you considered those customers who will buy and eat your comb honey that will not touch your extracted honey at any price? Remember the successful manufacturer or producer turns out what the consumers want! Not what he likes to produce. Remember the Demands of the Market!

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